ORDER NO. VRD9707011C2

Service Manual

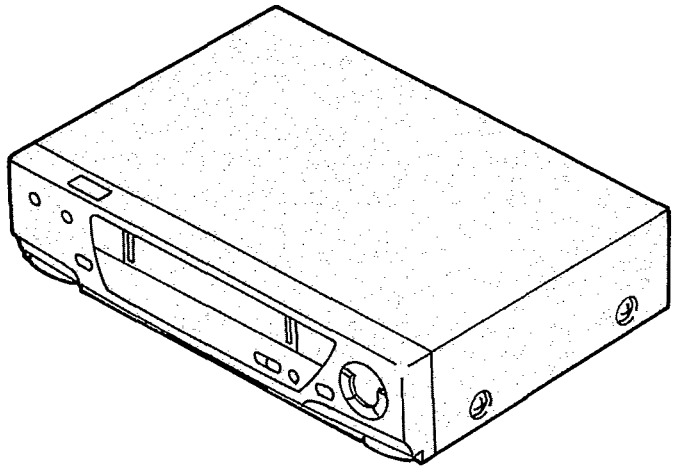
Video Cassette Recorder

General Description
Adjustment Procedures
Block / Schematic Diagrams
Exploded Views / Parts List

Panasonic VHS HQ
PAL

NV-SD270B

K-MECHANISM



SPECIFICATIONS

ITEM	SPECIFICATION
POWER	SOURCE: 220 – 240V, 50/60 Hz
	CONSUMPTION: 19 watts
RECORDING SYSTEM	2 rotary heads, helical scanning system
	PAL
TV TUNER SYSTEM	UHF: CH21 – CH69, 75Ω unbalanced
RF OUT SYSTEM	UHF: CH21 – CH69, 71±3dBμ, 75Ω terminated
VIDEO	HEADS: 2 rotary heads 1 pair for recording, playback and trick play (L - R heads)
	INPUT: EURO AV Connector (21pin) 1.0 Vp-p, 75Ω terminated
	OUTPUT: EURO AV Connector (21pin) 1.0 Vp-p, 75Ω terminated
AUDIO	HEAD: 1 Stationary head (Normal Audio)
	INPUT: EURO AV Connector (21pin x 2) – 6 dBV (500 mV), More than 10 kΩ

ITEM	SPECIFICATION
AUDIO	OUTPUT: EURO AV Connector (21pin x 2) – 6 dBV (500 mV), Less than 1 kΩ
TAPE FORMAT	VHS Cassette tape (Tape width 12.7 mm)
TAPE SPEED	SP: 23.39 mm/s LP: 11.7 mm/s Record/Playback Time: SP: 4 hours with 240 min. type tape (NV-E240) LP: 8 hours with 240 min. type tape (NV-E240) FF/REW Time: 2 minutes 30 seconds with 180 min. type tape (NV-E180)
OPERATING CONDITION	Temperature : 5°C – 40°C Humidity : 35% – 80%
DIMENSIONS	430 (W) × 99.9 (H) × 297 (D) mm
WEIGHT	4.2 kg
STANDARD ACCESSORIES	1 pc. DIN-RF Cable 1 pc. Remote Controller 1 pc. AC Cord

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

INTRODUCTION

This service manual contains technical information which will allow service personnels to understand and service this model. Section 1 presents you with technical know how for actual servicing and general information of features and controls, enabling you to become familiar with each function.
Section 2 presents to you mechanical and electrical adjustment information as well disassembly and replacement procedures. In the case of very common information relating to other models like mechanical adjustments, please refer to the appropriate service manual.
Section 3 contains block diagrams which offers you information for checking and understanding each circuit. Schematic diagrams which give you detailed information such as waveforms, voltage data, function etc. ...
Section 4 contains exploded views and parts list.
Please place orders using the parts list and not the drawing reference numbers.
If the circuit is changed or modified, this information will be followed by supplementary service manual to be filed with original service manual.

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SECTION 1
GENERAL DESCRIPTIONS

1-1. SERVICE INFORMATION

<A> CHECKING OF MAIN C.B.A.

When servicing the MAIN C.B.A., stand the MAIN C.B.A. and connect Extension Cable (VFK1033) between the POWER C.B.A. connector (P1103) and the MAIN C.B.A. connector (P1001) as shown in Fig. S1.
In this position, the following services are possible.

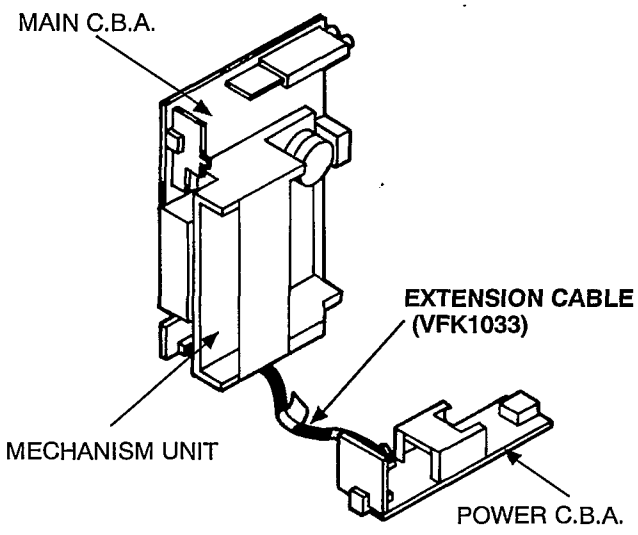


Fig.S1

<B> MECHANISM SERVICE POSITION

When servicing the K-Mechanism, take out the mechanism from the MAIN C.B.A. and connect Extension Cable (VFK0889) between the Loading motor connector and P2001 as shown in Fig.S2.
In this position , the following services are possible.

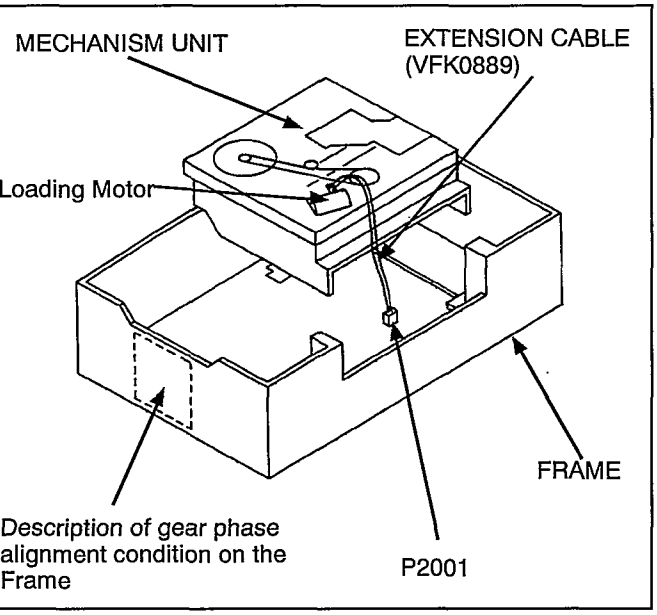


Fig.S2

<B-1> CHECKING OF GEAR PHASE ALIGNMENT CONDITION

Check gear phase Alignment Condition of Mechanism described on the left side of frame.

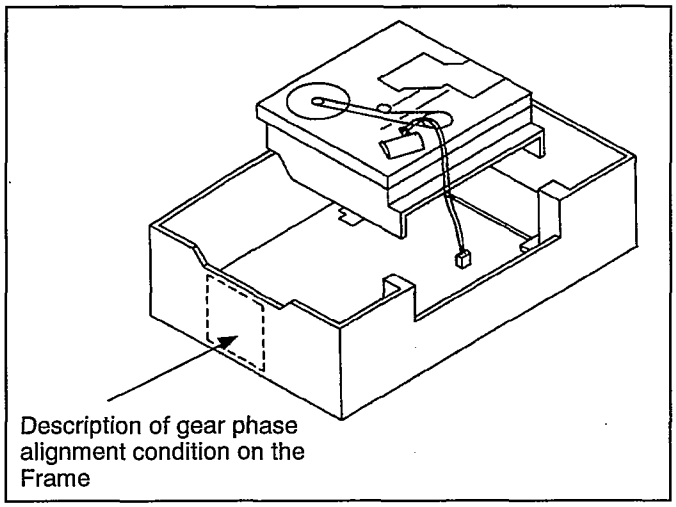


Fig.S3

<B-2> CHECKING OF LOADING/UNLOADING OPERATION

There are 3 methods for checking of loading/ unloading operation as follows.

(1) HAND OPERATION
1) Turn the Worm Gear or the Worm Wheel Gear (Remove the Loading Motor unit) manually.

(2) BATTERY OPERATION
1) Disconnect the Extension cable (VFK0889) from connection of loading motor unit.
2) Connect the Battery (Manganese-Type R6(AA) 3pcs. /+4.5V) to the Loading motor terminals.

(3) SERVICE INFORMATION DISPLAY OPERATION
1) Set the Service Information display mode. (Press the FF and EJECT buttons simultaneously.)
2) Press the FF and EJECT buttons 7 times to set the Service Mode 7.
3) In the above Service Information Display mode, the Loading Motor rotates for loading operation when the "PLAY" button is pressed. The Loading Motor rotates for unloading operation when the "STOP" button is pressed.

Remark:
Use the "SERVICE INFORMATION DISPLAY" mode for a final check of Mechanism movement.

<B-3> CHECKING OF REEL GEARS OPERATION

1) Move the mechanism to "PLAY" position by loading operation (Refer to < B >).
2) Turn the "Rotor Unit" to check the movement of reel gears.

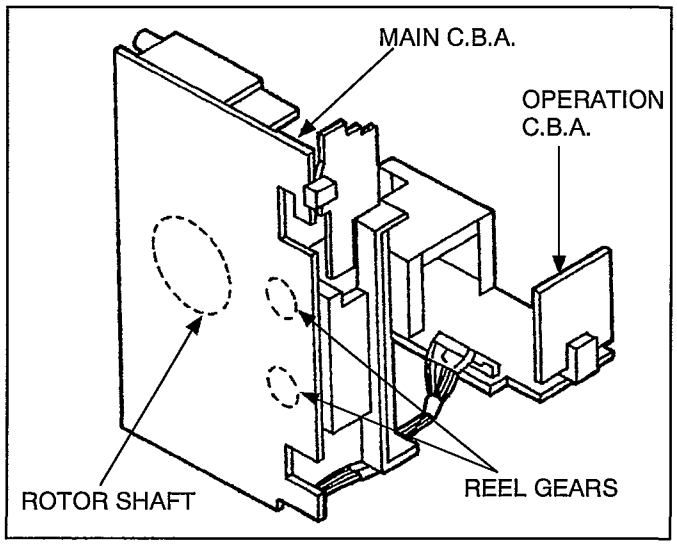


Fig.S4

<C> CYLINDER UNIT REPLACEMENT

Remove the 3 Screws of the CYLINDER UNIT with a magnetized screw driver in the MECHANISM SERVICE POSITION.

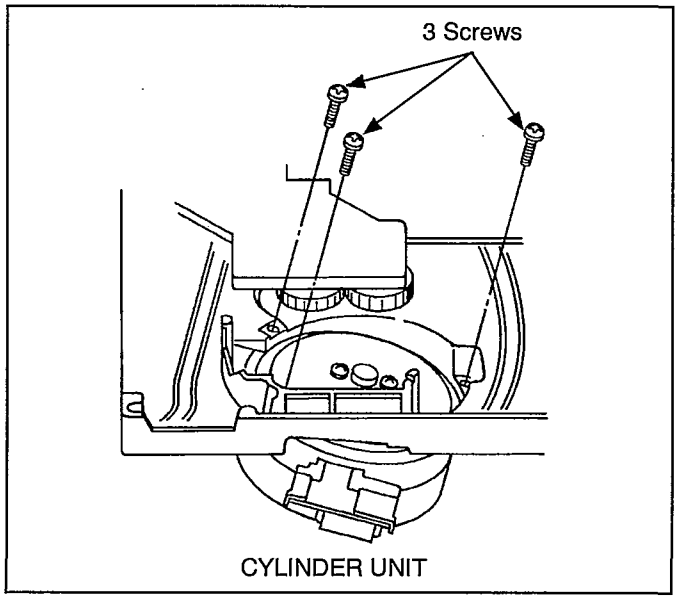


Fig.S5

<D> UPPER CYLINDER DISASSEMBLY

1. Remove 2 screws (A).
2. Remove the Cylinder Stator Unit.
3. Remove 2 screws (B).
4. Remove the Cylinder Rotor Unit.
5. Loose hex screw (C) and remove the Cylinder Retainer. (Use Hex. key Wrench 1.5mm)
6. Remove the Upper Cylinder .

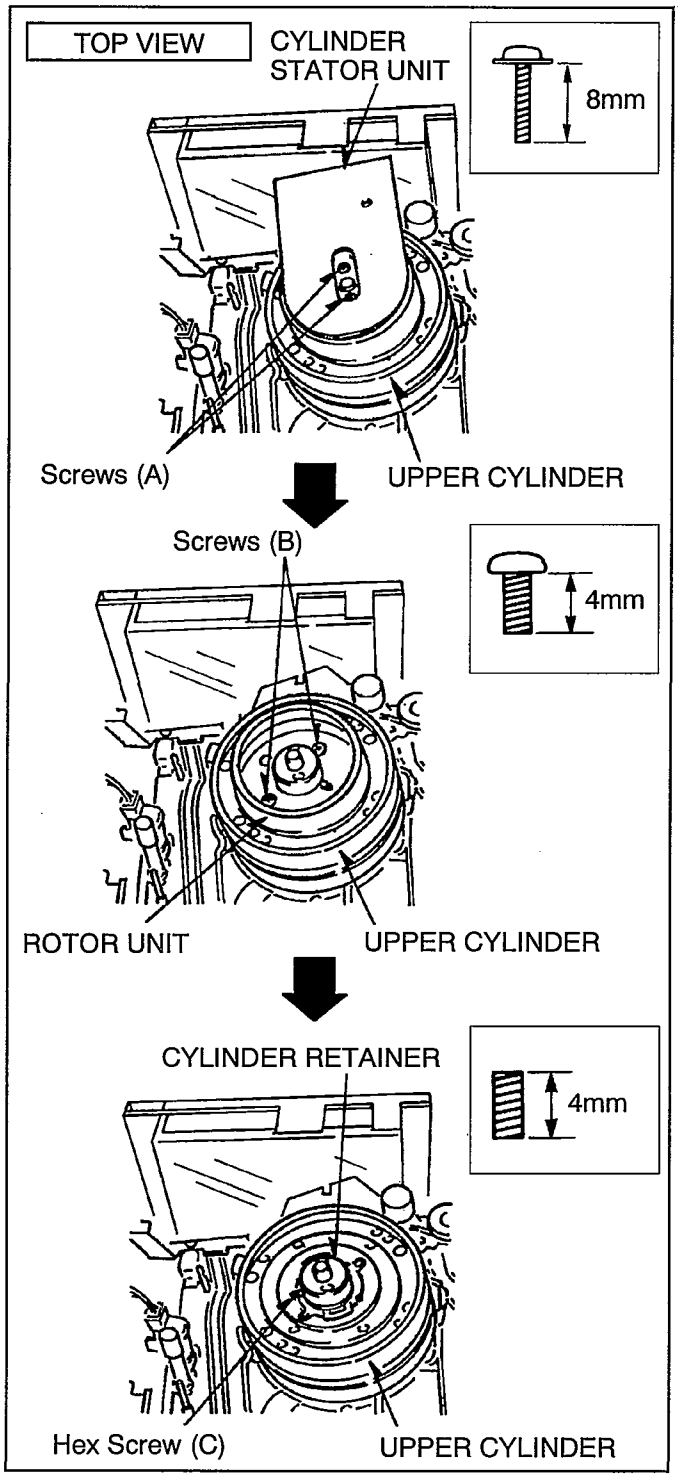


Fig.S6

<E> UPPER CYLINDER ASSEMBLY

When reassembling, perform the steps in the reverse order.

1) Install the Cylinder Retainer so that the 2 holes on top of the Cylinder Retainer are at right angles with the Head Amp C.B.A..
2) Tighten the hex screw (C) while pressing down on top of the Cylinder Retainer. (Use Hex. key Wrench 1.5mm)

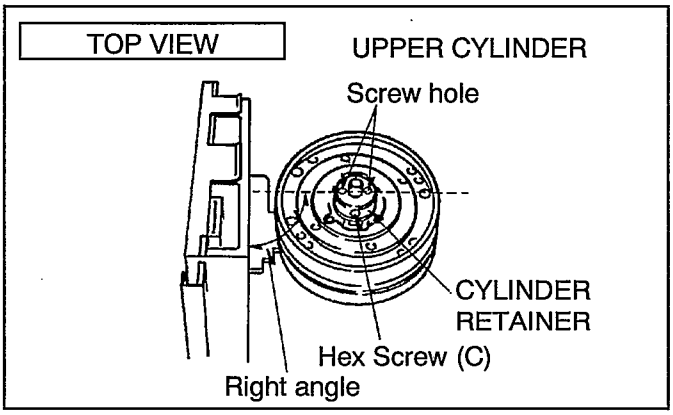


Fig.S7

3) Install the Cylinder Rotor Unit so that the inner hole of the Cylinder Rotor Unit fits to the small projection (D) on top of the Upper Cylinder.
4) Tighten 2 screws (B).

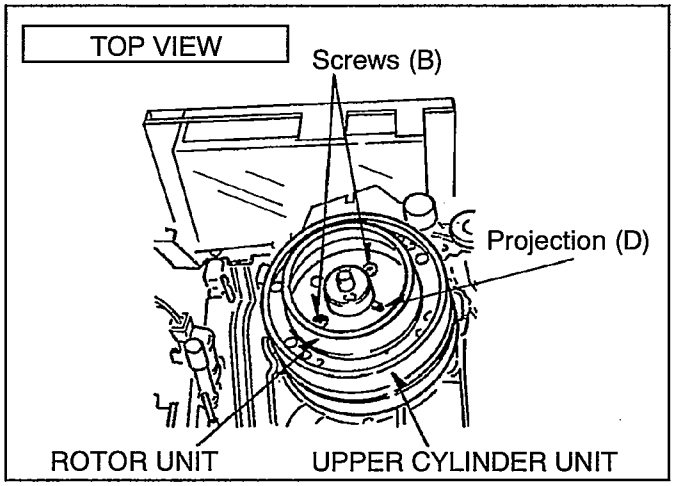


Fig.S8

5) Install the Cylinder Stator Unit so that the rear side of the Cylinder Stator C.B.A. is parallel with the Head Amp C.B.A..
6) Tighten 2 screws (A).

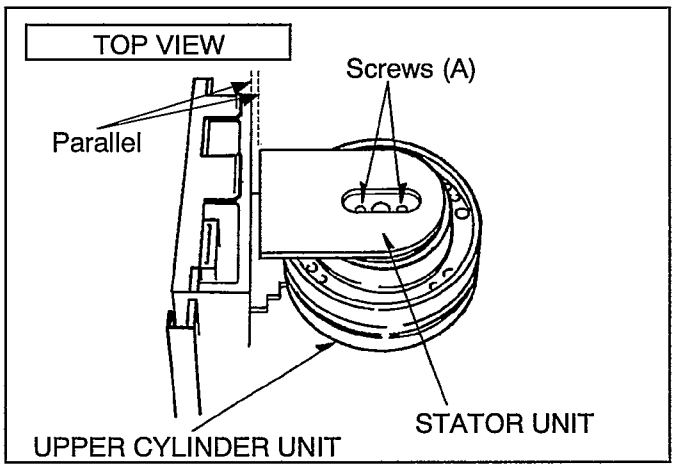


Fig.S9

7) Confirm the PG SHIFTER ADJUSTMENT with the alignment tape (PAL: VFJ8125H3F) and adjust it if necessary.

<F> CAPSTAN STATOR UNIT ASSEMBLY

When replacing the CAPSTAN STATOR UNIT, the STATOR CENTERING TOOL (VFK0851) must be used to center the CAPSTAN STATOR UNIT.

Method:
1) Place the CAPSTAN STATOR UNIT into position.
2) Loosely screw in the 3 Screws.
3) Insert the Stator Centering Tool (VFK0851) as show in Fig.S10.
4) Tighten the 3 Screws.
5) Remove the Stator Centering Tool.

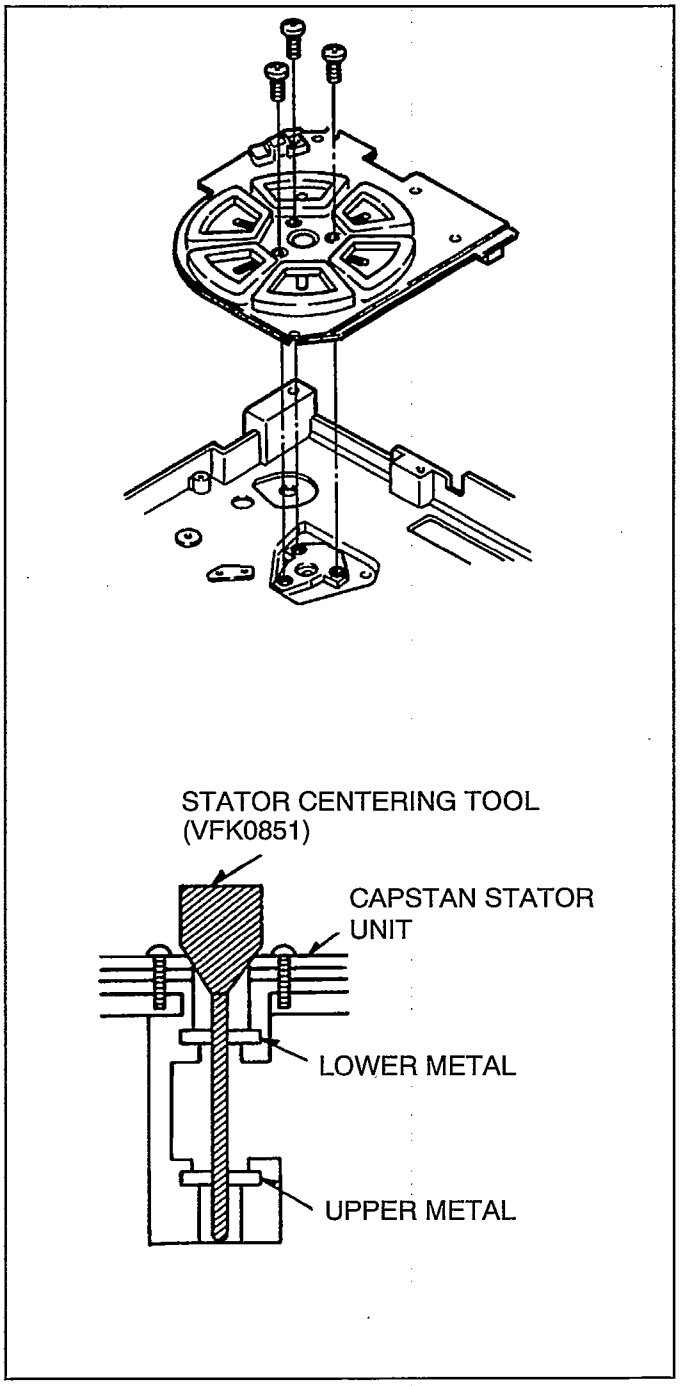


Fig.S10

<G> EJECT OPERATION

The main cam gear rotates in the direction of the arrow. The projection (B) of the carriage connection gear engages with the recession (A) of the main cam gear. The carriage connection gear rotates in the direction of the arrow to perform the Eject operation.

<NOTE>
If the Eject operation is performed without the cassette carriage installed while repairing or making the mechanical phase alignment, the main cam gear will not engage with the carriage connection gear and will not rotate.
To perform the Eject operation with the cassette carriage not installed, it is necessary to rotate the carriage connection gear by hand in the direction of the arrow.

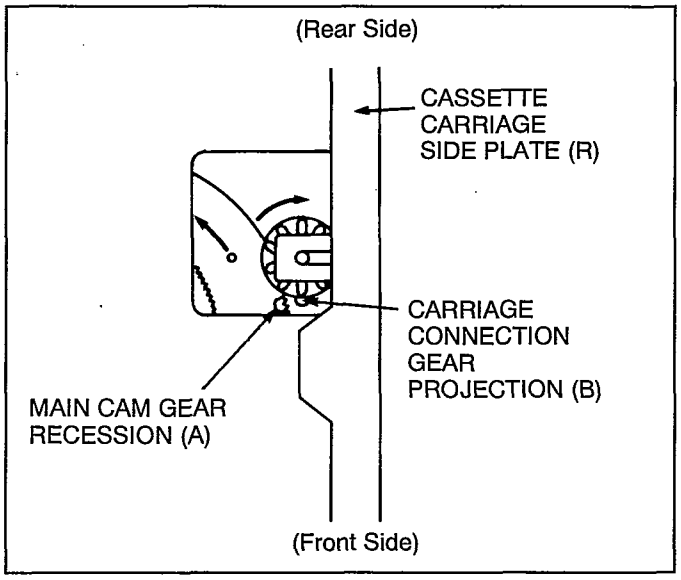


Fig. S11 Top View of Eject Operation

<H> TAKE-UP PHOTO SENSOR OPERATION

1) While servicing of the K-Mechanism, the unit will not operate properly if a strong light (ex, Fluorescent light) falls on the Take- up Photo Sensor.
   In this case, cover the Take-up Photo sensor to prevent the light from falling on it.

2) While servicing of the K-mechanism with "Power On " and without cassette tape inserted, the Unit will not operate properly.

< I > POWER TRANSISTOR SERVICING

When removing the connector of the POWER Transistor, hold the Power Transistor by hand to prevent damage.

< J > CASSETTE TAPE REMOVAL

(1) HAND OPERATION

1) Take out the mechanism from MAIN C.B.A.
2) Turn the Worm Gear manually, moving the Loading post to the unloaded position.
3) Turn the Capstan Rotor Unit clockwise to Take up the Tape.
4) Turn the Worm Gear again to eject the cassette.

(2) BATTERY OPERATION

1) Connect the battery (Manganese-Type R6 (AA)3pcs./ +4.5V) to P2001 as shown in Fig.S12.
2) After moving the LOADING POST to the unloaded position, disconnect the battery to stop the motor.
3) Turn the CAPSTAN to clockwise to take up the tape.
4) Reconnect the battery to eject the cassette.

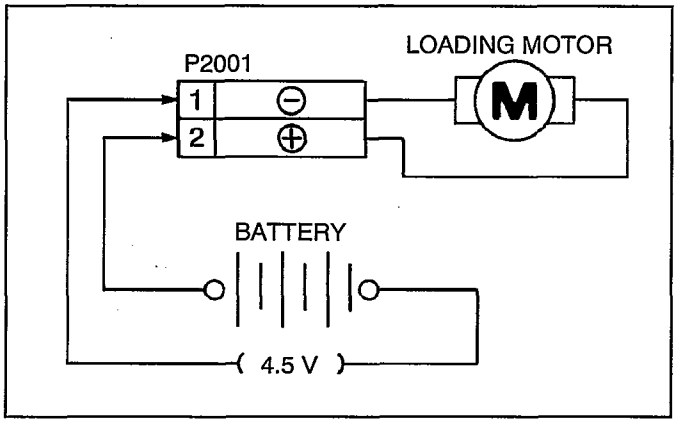


Fig. S12

If the cassette tape can not be removed by the above method, remove it by the following method.

1) Remove the Top Panel.
2) Remove the Front Panel Unit.
3) Lift up the Pinch Arm after removing spring.
4) Push the P5 Arm and remove the Tape from tape transportation (P3, P2, P5 and P1 Post).
5) Turn the Capstan Motor to take up the Tape.
6) Remove 1 screw from the Side Plate (R) Unit to disconnect the Rack Gear from the Carriage Connection Gear.
7) Take out the Cassette Tape from the Cassette Compartment.

<K> FLAT CARD CABLE INSTALLATION

When installing the Flat Card Cable on the connector, install the cable with the cable contacts facing the connector contacts.

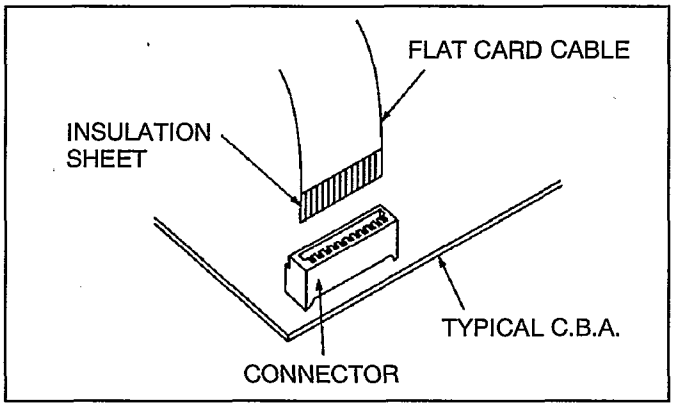


Fig. S13

<L> CHANNEL MEMORY IC INITIALIZATION

When replacing the memory IC7704, its IC should be initialized.

Note:
1) It should be performed before tuning.
2) Meaning of " INITIALIZATION " is to make dependency in different models and to distinguish between different features.

Method:
1) Connect a jumper wire (K508) which has been cut.

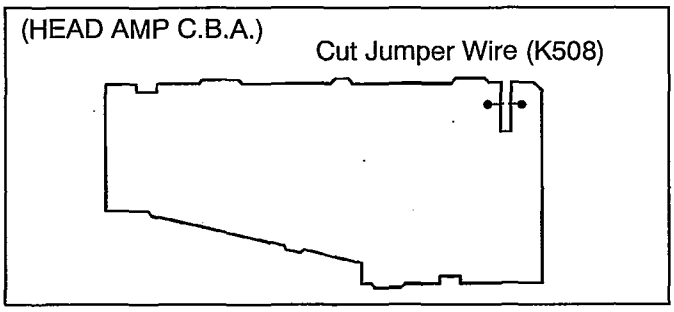


Fig. S14

2) Press the "FF" and "EJECT" buttons to set the Service Mode. (Test Mode will be appeared on the monitor TV.)
3) Set the Model Code for this model by using 10-key on the Remote Controller Unit as follows.
4) After finishing the initialization, disconnect the jumper wire and cancel the Service Mode.

	SD270B
Code No.	0 9

1-2. SERVICE MODE

The service mode is used for the factory and service purpose only.
The following service screen will be appeared on the monitor when the VCR will be set to the service mode.
The procedure have to be operated by the following method.
This service screen will help service personnels to set model code or to confirm the model condition as follows.
The model code is used to make dependency in different models and to distinguish between different features.
The model code is same as above model code in CHANNEL MEMORY IC INITIALIZATION.

Procedure of service mode	DISPLAY
1. Turn on VCR.	
2. Set service mode 2 by pressing "FF" key and "EJECT" key simultaneously 3 times.	
3. Press "EJECT" key on VCR more than 3 seconds. The digit of minute is put out light.	
4. Press "Channel up" key on VCR 2 times. " 2 " is indicated in the digit of minute.	
5. Press "POWER" key on VCR. Service screen will be appeared.	(Colon starts flashing)
6. Press "POWER" key on VCR in order to disappear service screen.	

Service Screen

Service		Panasonic
Versions : OSD		BAAA0. 36
TIMER		V6AJ2. 0
Pos for time reference	:	NONE
Last error code	:	01
Model code	:	20
Clock adjust	:	+0
VPS/PDC default	:	ON depend

↑ ↓	:	select
0 – 9	:	change

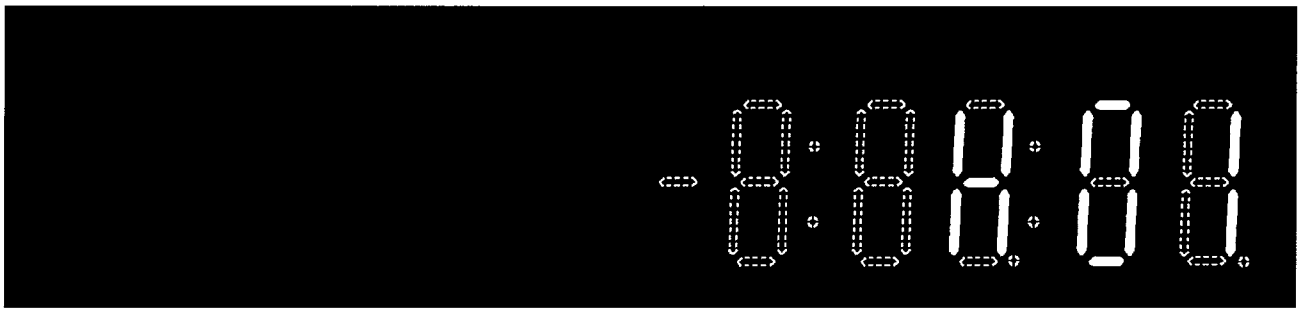
NOTE : Since the " Clock adjust " and " VPS/PDC default " are future expansion, do not change the initial setting.

1-3. SELF- TEST INDICATION DISPLAY

This VTR has a self- diagnosis and display function. If the VTR detects trouble during installation or during use, one of the following Fault indication Codes will automatically appear in the VTR display. Fault indication codes are displayed in the form of a single English letter followed by two numbers, as for example "H01".

Note: 1. The indication "U" is displayed on the FIP while power remains on.
2. Otherwise, the indication "H" or "F" is displayed on the FIP, and the power is automatically turned off.
When the power is turned on again, the Fault Indication Code will disappear and the unit will return to normal display mode (either clock or counter).
3. This Fault Indication Code will be stored in the Timer microprocessor even with the AC plug disconnected.
The two- digit number portion of the stored Fault Indication Code can be redisplayed in the FIP's "second" display position (the last 2 digits on the light) by placing the unit is Service Mode Number 2 when turning on Service Information Display as for example "01" or "02" etc.
If a second error occurs, only the most recent error will be displayed and stored.
4. To erase the stored Fault Indication Code data, press the FF and EJECT buttons simultaneously for 5 seconds.

< FIP >



INDICATION	CAUSE	REMEDY/ CHECK
H01	After cylinder lock is detected, the cylinder does not start rotating again even after tape unloading.	Check the cylinder- motor drive circuit.
H02	Cassette tape is not wound up during tape unloading except Eject mode.	Check the capstan- motor drive circuit.
F03	Mechanism locks during mode transition except Eject mode.	1.Check the loading- motor drive circuit. 2.Check the mechanism phase alignment. 3.Check the Mode Switch.
F04	Mechanism locks during tape unloading.	1.Check the loading- motor drive circuit. 2.Check the mechanism phase alignment.
F05	Cassette tape is not wound up during tape unloading in Eject mode.	1.Check the capstan- motor drive circuit. 2.Check the Supply/ Take- up reel pulse.
F06	Mechanism locks after tape unloading in Eject mode.	1.Check the loading- motor drive circuit. 2.Check the mechanism phase alignment for Cassette Holder Unit.
F07	Rec power voltage does not appear in Rec mode.	Check the Rec power supply circuit.
F08	Rec power voltage appears except Rec mode.	Check the Rec power supply circuit.
F09	No serial clock transmission between IC6001 and IC7501.	Check the serial clock circuit.

Fig. S15 Self- Test Indication Display

1-4. SERVICE INFORMATION DISPLAY

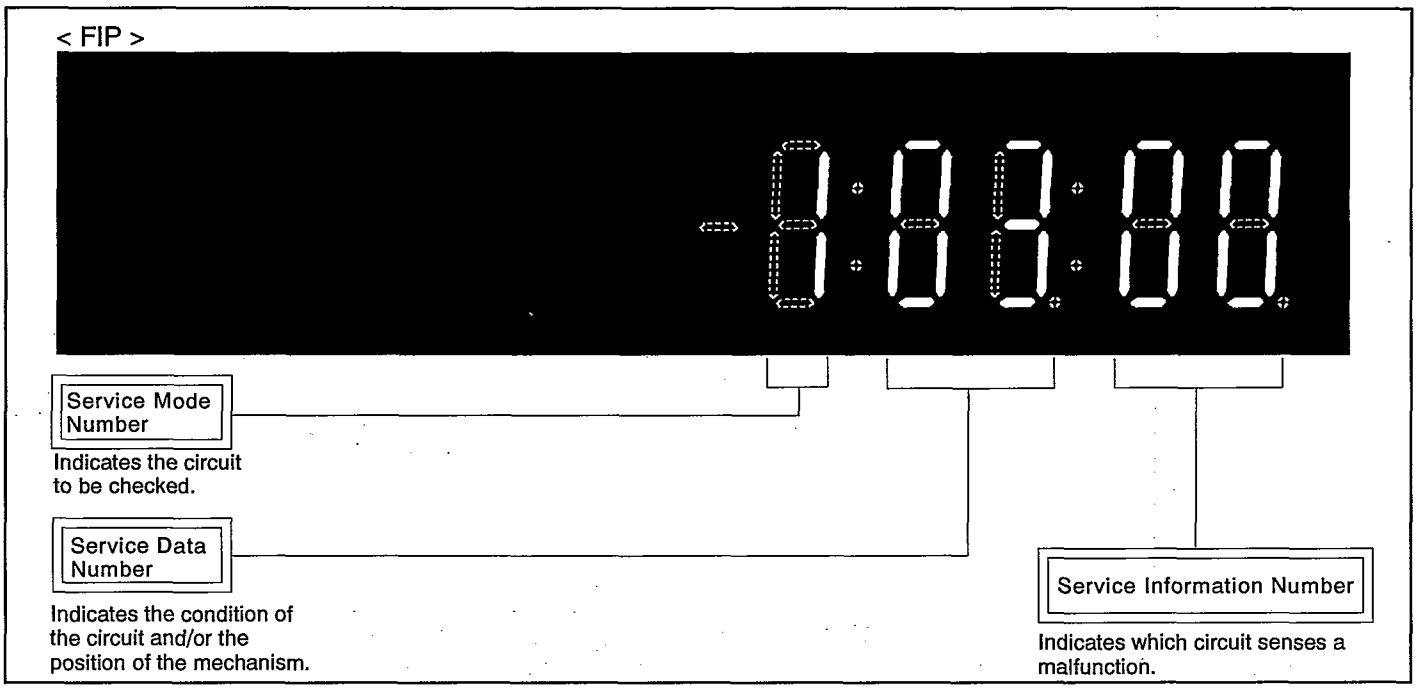

< FIP >
Service Mode Number
Indicates the circuit to be checked.
Service Data Number
Indicates the condition of the circuit and/or the position of the mechanism.
Service Information Number
Indicates which circuit senses a malfunction.

Fig. S16 Service Information Display

1-4-1. Purpose of Service Information Display

This information aids trouble shooting by indicating the source of the malfunction. The service mode number & service data number are used by the technician during repair while the service information can be used by the consumer to diagnose malfunctions allowing the technician to provide a more accurate repair cost estimate and reduce repair time.

1-4-2. Turning on Service Information Display

Press the FF and EJECT buttons simultaneously.

In the Service Information Display, there are five digits divided into 3 functions. The first digit indicates which of the 7 service modes that the unit is currently in.

MODE 0 : Not Used
MODE 1 : Checks tape protection circuit
MODE 2 : Checks tape transport mechanism
MODE 3 : Checks mode switching operation
MODE 4 : Checks control buttons
MODE 5 : Checks capstan motor
MODE 6 : Checks cylinder motor
MODE 7 : Checks loading/unloading operation

The second and third digits are service data which indicate the condition of the circuit or mechanism being checked.

The forth and fifth digit is the service information display. It is to be used by the consumer to help determine the source of a malfunction. The service information display operates independently of the service modes and stores the fault indication in memory for as long as AC power is not supplied.

1-4-3. Use of Service Modes

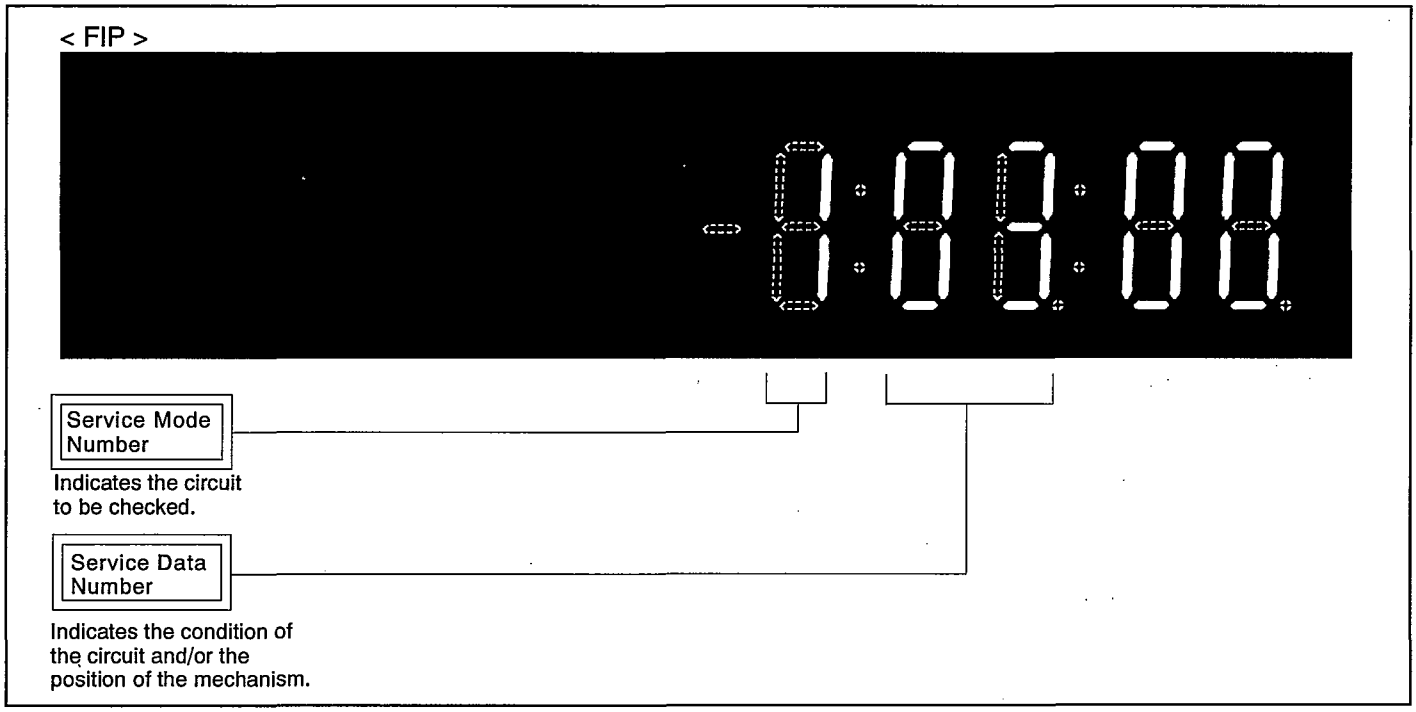

< FIP >
Service Mode Number
Indicates the circuit to be checked.
Service Data Number
Indicates the condition of the circuit and/or the position of the mechanism.

Fig. S17 Service Mode Number and Service Data Number on S.I.D.

(1) Turn on Service Information Display.

(2) To change Service Modes press the FF and EJECT buttons simultaneously.

(3) Mode 0 : Not Used.

(4) Mode 1 : Check that the Sensor LED, Supply & Take-up Sensor circuits check the circuits by blocking the light from the Sensor LED to either or both Supply & Take-up Sensors. When the light is blocked to both sensors, "00" should be indicated on the service data number. When the light is blocked to the supply sensor, " 01 " should be indicated.

(5) Mode 2 : Checks the mode switch circuit while indicating mechanism position. Service Data Numbers indicate the position of the mode switch and there by the mechanism position.

(6) Mode 3 : Checks that mode switch circuit operations have been completed. Service Data Number should indicate "00" after each mechanism operation is completed.

(7) Mode 4 : Checks the operation circuit. Indicates if IC6001 receives the operating commands from the mode buttons and/or remote controller.

(8) Mode 5 : Checks the capstan motor circuit. Indicates if the IC6001 has received the command to rotate the capstan motor.

(9) Mode 6 : Check the cylinder motor circuit. IC6001 has received the command to rotate the cylinder motor.

(10) Mode 7 : Checks the Loading/ Unloading Operation. The Loading Motor rotates for loading operation when the " PLAY " button is pressed. The Loading Motor rotates for unloading operation when the " STOP " button is pressed. This mode can be displayed indefinitely until the POWER button is pressed.

<NOTE> Refer to Fig. S20 for details of Service Data Number.

1-4-4. Service Information Number

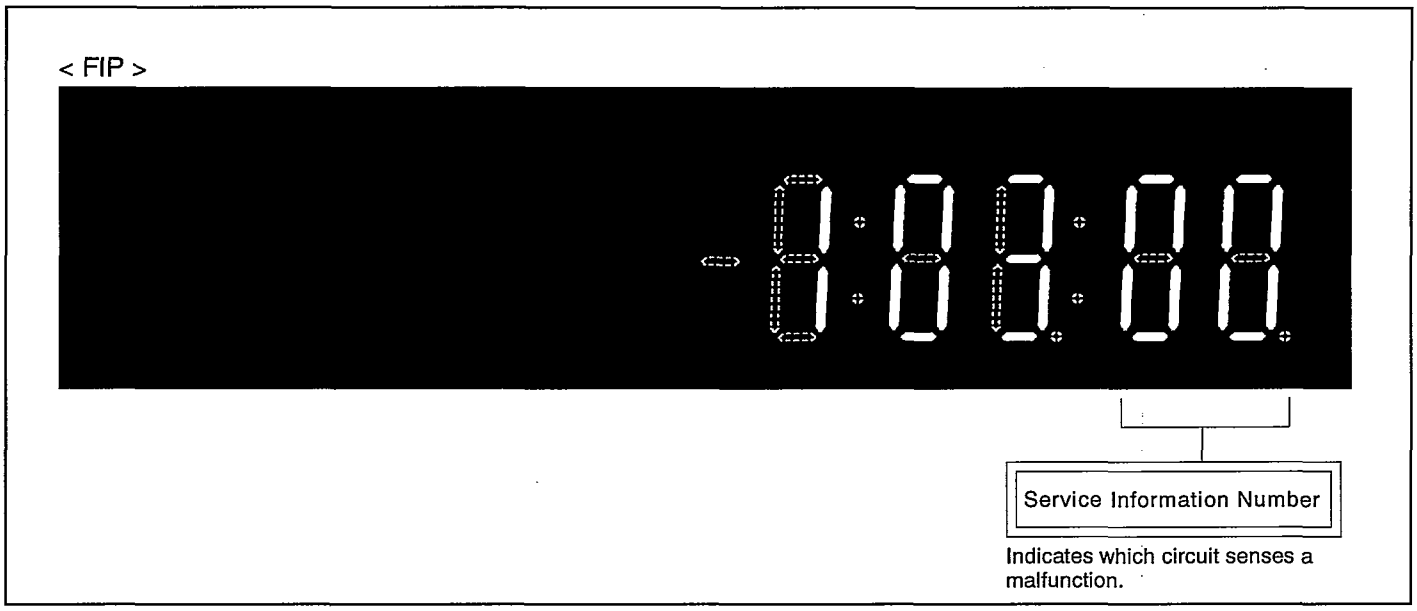


Fig. S18 Service Information Number on S. I. D.

Refer to Fig. S19 for details of Service Information Number.

Note:

The Service Information Number display is independent of the service mode display.
The Service Information Number will be stored as long as AC power is not supplied. If a second error occurs, only the most recent error will be displayed.

Service Information Number	Malfunction
00	Normal (No problem)
01	Cylinder stop
02	Tape reel stop
03	Stop at position other than 04 or 06 (Faulty loading motor)
04	Stop during unloading
05	Faulty capstan rotation
06	Stop during Cassette-IN/EJECT operation
07	REC Power voltage error in REC Mode
08	REC Power voltage error except REC Mode
09	Main Serial communication error between system control and Timer

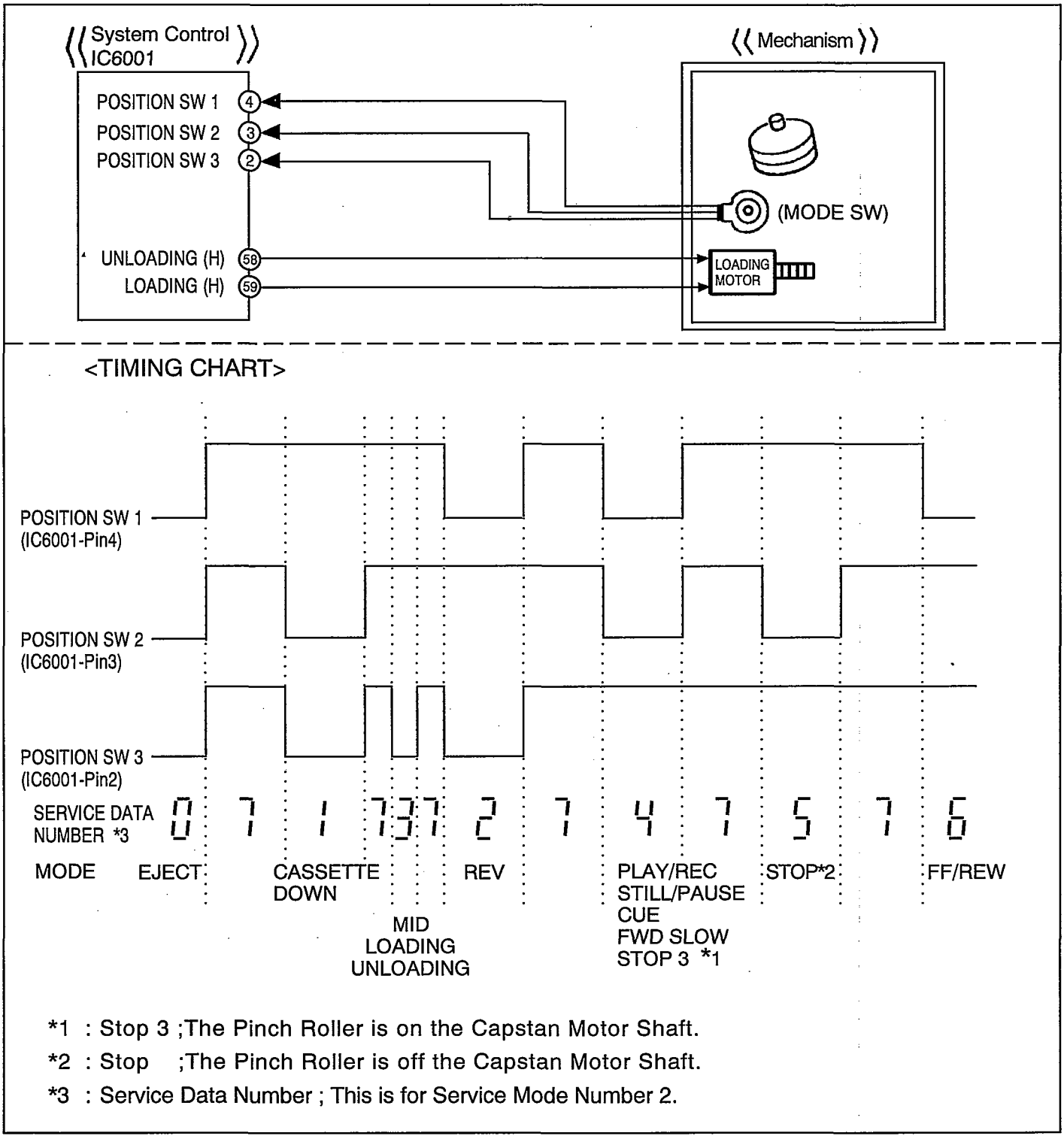
Fig. S19 Detail Service Information Numbers

Service mode Number	Note for checking Service Data Numbers	Service Data Numbers	Indication	Remarks
1	———	00	No light detected at either sensor.	Tape not required
		01	Tape Beginning. Light to Supply Photo Sensor is blocked.	
		02	Tape End. Light to Take-up Photo Sensor is blocked.	
		03	Light detected at both sensors.	
2	———	00	EJECT	Tape Required *1: STOP3; The Pinch Roller is on the capstan motor shaft. *2: STOP; The Pinch Roller is off the capstan motor shaft. Refer to Fig.S21 to Check mechanism Position and timing.
		01	Cassette-down	
		02	REV	
		03	Loading/Unloading	
		04	PLAY/REC, STILL/PAUSE, CUE, FWD SLOW, STOP3*1	
		05	STOP *2	
		06	FF/REW	
		07	Intermediate position.	
3	Disregard service data displayed until mechanism operation is completed. Then the display should indicate "00".	00	Any display other than "00" indicates a fault in the mode switch circuit or system.	Tape Required
4	Display only when the operating button is pressed.	———		Tape not required
5	Left digit only, disregard Right digit display.	01 (Left Digit / Right Digit)	8, 9, u, A, -, n, L, and no display indicate that the Capstan motor "PLAY" command received by IC6001.	Tape required. If a symbol other than those listed is displayed, a malfunction in that circuit is indicated.
	Right digit only, disregard Left digit display.	07 (Left Digit / Right Digit)	1, 2, 3, 4, 5, 6, 7, indicate that the Capstan motor "CUE, FF, Forward slow" commands received by IC6001.	
	Right digit only, disregard Left digit display.	0 (Left Digit / Right Digit)	8, 9, u, A, -, n, L, and no display indicate that the Capstan motor "Reverse, Rew, Reverse Slow" commands received by IC6001.	
6	Left digit only, disregard Right digit display.	10 (Left Digit / Right Digit)	1, 3, 5, 7, 9, A, n and no display indicate that the cylinder motor "ON" command received by IC6001.	Tape required. If a symbol other than those listed is displayed, a malfunction in that circuit is indicated.

Fig. S20 Detail Service Data Number

1-4-5. Timing Chart from Mode SW to System control IC6001

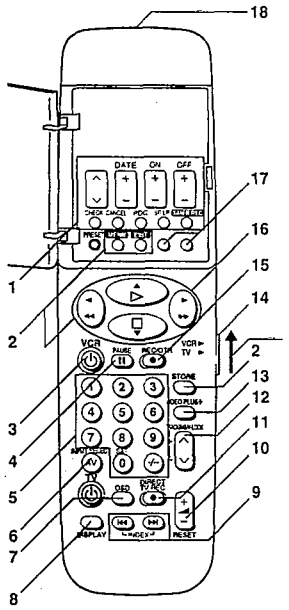
System control IC6001 senses the mechanism position through the Mode SW.
Fig. S21 shows the timing for Service Mode Number 2.



*1 : Stop 3 ;The Pinch Roller is on the Capstan Motor Shaft.
*2 : Stop ;The Pinch Roller is off the Capstan Motor Shaft.
*3 : Service Data Number ; This is for Service Mode Number 2.

Fig. S21 Timing Chart of Mode SW

Infra-red Remote Controller



Set the **VCR/TV** switch to **VCR** to use the ∨ ∧, **RESET**, **INPUT SELECT** and the **numeric buttons**.

VCR OPERATION

1 Timer Recording Operation Buttons

∨ ∧, DATE, ON, OFF:
To programme a timer recording.

CHECK:
To check timer programmes.

CANCEL:
To cancel timer programmes.

PDC:
To set the PDC recording option or cancel the option.

SP/LP:
To select the tape speed desired for recording.
SP gives the best picture quality.
LP gives the longest recording time.

TIMER REC:
To turn the timer recording function on and off.
⏲ is lit or not lit.
Once operating timer recording function, the normal VCR operation is not possible unless this button is set to off.

2 On Screen Display Menu Operation Buttons
The buttons with the green characters are used for the on screen display menu operation.

MENU:	To make On Screen Display **Main Menu** appear on the TV screen.
EXIT:	To exit the menu.
STORE:	To confirm the selection, or to store.
▲ ▼ ◀ ▶:	To make selections from On Screen Display.

- These buttons can also be used for the playback, stop rewind and fast forward mode.

3 VCR ⏻
Press to switch the VCR from on to standby mode or vice versa. In standby mode, the VCR is still connected to the mains.

4 PAUSE

During playback:	Still picture. "II" is lit.
During recording:	To interrupt recording.

5 Numeric Buttons
Ensure that the **VCR/TV** switch is set to **VCR**.
- To select the programme positions (1–99) of the VCR.

9: (9)
19: (-/--) – (1) – (9)

- To select the satellite programme positions (SAT1–SAT99).

SAT 9: SAT (0) – SAT (0) – (9)
SAT 19: SAT (0) – (1) – (9)

- To enter a PlusCode.

6 INPUT SELECT
To select the A1 or A2 external recording source.
- Ensure that the **VCR/TV** switch is set to **VCR**.

7 OSD
For the On Screen Display function.

8 DISPLAY
To change the indication on the VCR Display.

Clock↔Counter↔Remaining Tape Time

9 INDEX
For the index search function.

10 RESET
To reset the tape counter (elapsed time) to "0:00.00".
- The button performs the resetting function only when the "⌣" side is pressed.
- The tape counter is automatically reset to "0:00.00" when a video cassette is inserted.
- Ensure that the **VCR/TV** switch is set to **VCR**.

11 DIRECT TV REC
For the Direct TV REC function.

12 ∨ ∧
To select the required programme position (TV station) of the VCR.

For the tracking adjustment and vertical locking adjustment
- For manual tracking adjustment
  The ∨ (–) and ∧ (+) buttons are used to adjust the tracking when, for example, noise bars on the picture during normal playback are better removed manually than by automatic digital tracking control. Press both buttons down at the same time to return to automatic digital tracking control.
- For vertical locking adjustment
  Use the ∨ and ∧ buttons to minimize any vertical jitter during still picture playback.

Ensure that the **VCR/TV** switch is set to **VCR**.

13 VIDEO PLUS+
For the Video Plus+ programming.

14 VCR/TV switch

VCR:	To select the VCR operation mode.
TV:	To select the TV operation mode.

15 REC/OTR
To start a recording.
For One-Touch Recording (OTR).

16 ◀◀ (REWIND)

In the stop mode:	To rewind the tape.
In the playback mode:	To search backward.
In the rewind mode:	To obtain high speed picture.

"◁◁" is lit.

▷ (PLAY)
To start playback. "▷" is lit.

▶▶ (FAST FORWARD)

In the stop mode:	To fast forward the tape.
In the playback mode:	To search forward.
In the fast forward mode:	To obtain high speed picture.

"▷▷" is lit.

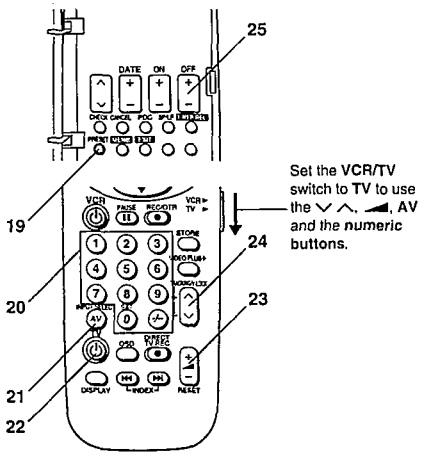
□ (STOP)
To stop any playback or recording.

17 These buttons are not used to operate this VCR.

18 Infra-red Transmitter

TV OPERATION

Refer to page 43.



19 PRESET
To set the remote controller for operation of the TV.

20 Numeric Buttons
To select programme positions (1–99) of the TV.
- Ensure that the VCR/TV switch is set to TV.

21 AV
To select TV input.
- Ensure that the VCR/TV switch is set to TV.

22 TV ⏻
Press to switch the TV from on to standby mode or vice versa. In standby mode, the TV is still connected to the mains.
- With some TV models, it may only be possible to switch the TV to the standby mode using the button. In this case, use the numeric buttons, AV or ∨ ∧ to switch the TV on.

23 ◢
To adjust the volume of the TV.
- Ensure that the VCR/TV switch is set to TV.

24 ∨ ∧
To select the required programme position (TV station) of the TV.
- Ensure that the VCR/TV switch is set to TV.

25 OFF
To set the remote controller for operation of the TV.

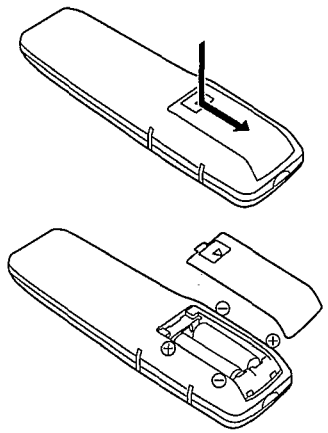
Power Source for the Remote Controller

The remote controller is powered by 2 "AA", "UM3" or "R6" size batteries. The life of the batteries is about one year, although this depends on the frequency of use.

Precautions for Battery Replacement

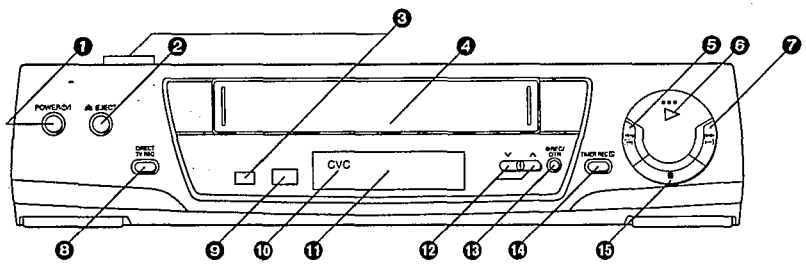
- Load the new batteries with their polarity (⊕ and ⊖) aligned correctly.
- Do not apply heat to the batteries, or an internal short-circuit may occur.
- *If you do not intend to use the remote controller for a long period of time, remove the batteries and store them in a cool and dry place.*
- Remove spent batteries immediately and dispose of them.
- *Do not use an old and a new battery together, and never use an alkaline battery with a manganese battery.*

Installing the Batteries



Controls and Connection Sockets

This gives a detailed explanation of the function of each button and connection socket.



FRONT

❶ POWER ⏻/I
Press to switch the VCR from on to standby mode or vice versa. In standby mode, the VCR is still connected to the mains.

❷ EJECT
To eject a video cassette.

❸ Infra-red Signal Transmitter
Signals are sent from here to the receiver when using this unit to control one of the satellite receivers found on the attached list of compatible satellite receivers. For assured satellite receiver control, **Satellite Settings** must be performed at the installation stage.

❹ *Cassette Compartment*
Insert a video cassette here.

❺ ◀◀ (REWIND)
In the stop mode: To rewind the tape.
In the playback mode: To search backward.
In the rewind mode: To obtain high speed picture.
"◁◁" is lit.

❻ ▷ (PLAY)
To start playback. "▷" is lit.

❼ ▶▶ (FAST FORWARD)
In the stop mode: To fast forward the tape.
In the playback mode: To search forward.
In the fast forward mode: To obtain high speed picture.
"▷▷" is lit.

❽ DIRECT TV REC
For the Direct TV REC function.

❾ Infra-red Remote Control Receiver Window

❿ CVC (Crystal View Control) Indicator
Indicates that the CVC function is active.
This indicator is always lit when the power is on.

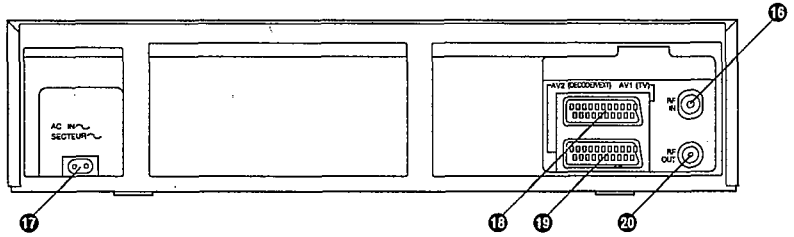
⓫ *Display*

⓬ ∨ ∧
To select the required programme position (TV station).
- These buttons can also be used for the tracking adjustment and vertical locking adjustment.

⓭ REC/OTR
To start a recording.
For One-Touch Recording (OTR).

⓮ TIMER REC
To turn the timer recording function on and off.
⏲ is lit or not lit.
Once operating timer recording function, the normal VCR operation is not possible unless this button is set to off.

⓯ ■ (STOP)
To stop any playback or recording.

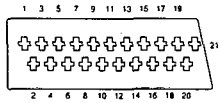


REAR

16 RF IN
To connect to the external aerial.

17 AC IN~
To connect to the main power supply.

18 AV1 (TV)
This 21-pin scart terminal carries input and output signals for both picture and sound. TV sets equipped with a similar socket can be connected here.
This is also called Scart
Peritel
Euro Connector
Euro AV



1	AUDIO OUTPUT	13	RED GROUND
2	AUDIO INPUT	14	BLANKING GROUND
3	AUDIO OUTPUT	15	RED
4	AUDIO GROUND	16	BLANKING
5	BLUE GROUND	17	VIDEO OUTPUT GROUND
6	AUDIO INPUT	18	VIDEO INPUT GROUND
7	BLUE	19	VIDEO OUTPUT
8	SWITCHING VOLTAGE	20	VIDEO INPUT
9	GREEN GROUND	21	GROUND
10	CONTROL SIGNAL		
11	GREEN		
12	No connection		

Note:
RED, GREEN and BLUE (RGB) signals are loop-through only, not from tape playback, E.G. when connecting to a pay TV decoder.

19 AV2 (DECODER/EXT)
To connect to a decoder, another VCR or a satellite receiver.
- Only used as the input socket.

20 RF OUT
To connect to the aerial terminal on a TV set.

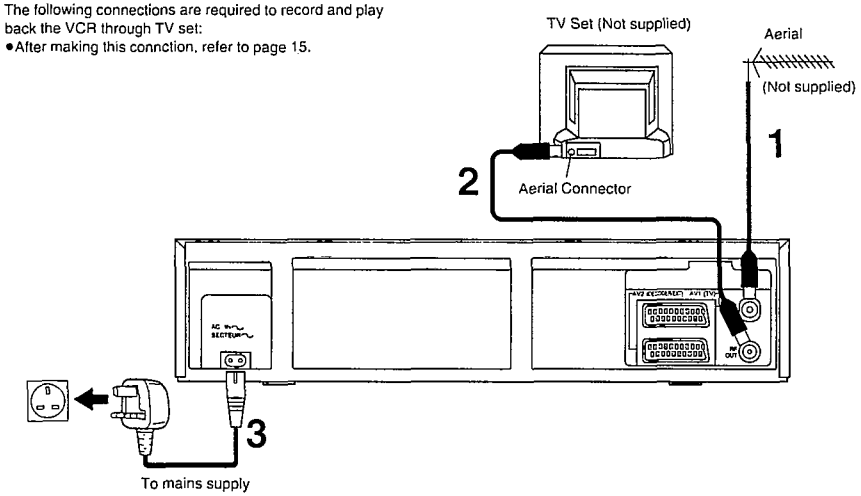
Note:
A satellite receiver should normaly be connected to AV1 terminal.
AV2 can be used for connection to satellite receiver, but **AV2 Connection** on the MENU must first be set to **VCR/SAT**. (See page 41.)

Connections

This tells you how to connect with an aerial, TV, etc.

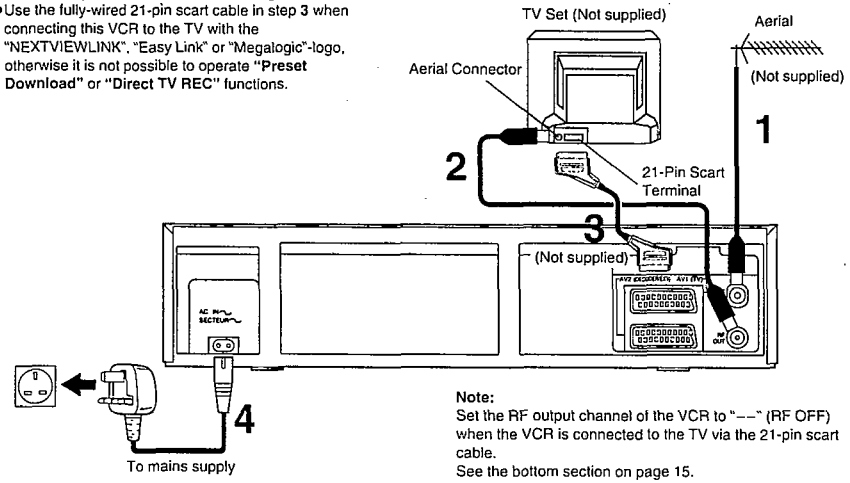
Basic Connections

The following connections are required to record and play back the VCR through TV set:
- After making this connction, refer to page 15.



Connection to a TV Set with 21-Pin Scart Terminal

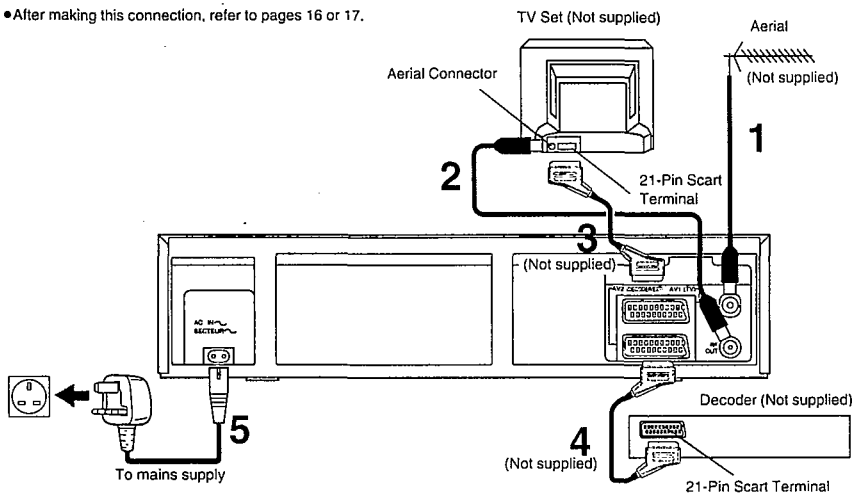
- After making this connection, refer to pages 16 or 17.
- Use the fully-wired 21-pin scart cable in step 3 when connecting this VCR to the TV with the "NEXTVIEWLINK", "Easy Link" or "Megalogic"-logo, otherwise it is not possible to operate **"Preset Download"** or **"Direct TV REC"** functions.



Note:
Set the RF output channel of the VCR to "--" (RF OFF) when the VCR is connected to the TV via the 21-pin scart cable.
See the bottom section on page 15.

Connection to a Decoder

•After making this connection, refer to pages 16 or 17.



Notes:

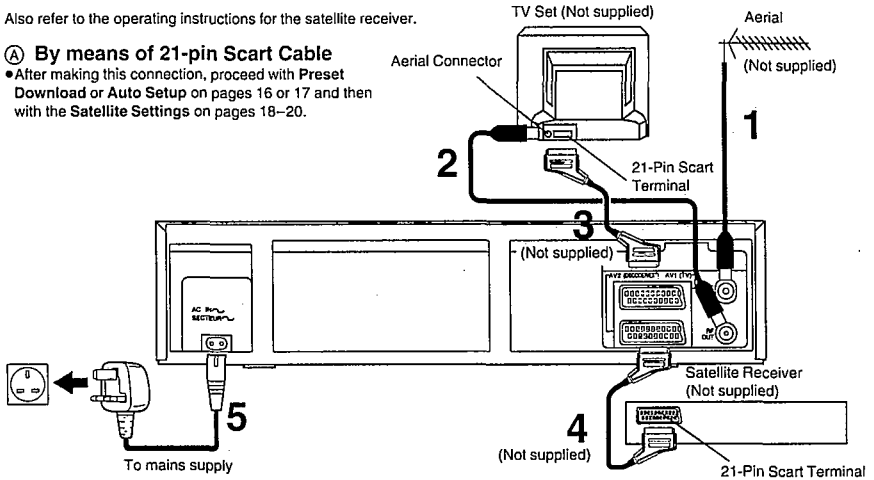
- *"RGB" is an abbreviation for "RED/GREEN/BLUE"* signals. If the TV with RGB input capability is connected to AV1 and the unit with RGB output capability is connected to AV2, the TV can receive RGB signal from the unit through the VCR.
- Use fully-wired 21-pin scart cable for the connection.
- Selection of RGB or normal video output is done by the external equipment connected to AV2 terminal.
- Set the RF output channel of the VCR to "--" (RF OFF) when the VCR is connected to the TV via the 21-pin scart cable.
  See the bottom section on page 15.
- When the decoder is connected to the AV2 socket, **AV2 Connection** must first be set to **DECODER.**
  (See page 41.)

Connection to a Satellite Receiver

Also refer to the operating instructions for the satellite receiver.

Ⓐ By means of 21-pin Scart Cable

•After making this connection, proceed with **Preset Download** or **Auto Setup** on pages 16 or 17 and then with the **Satellite Settings** on pages 18–20.



Notes:

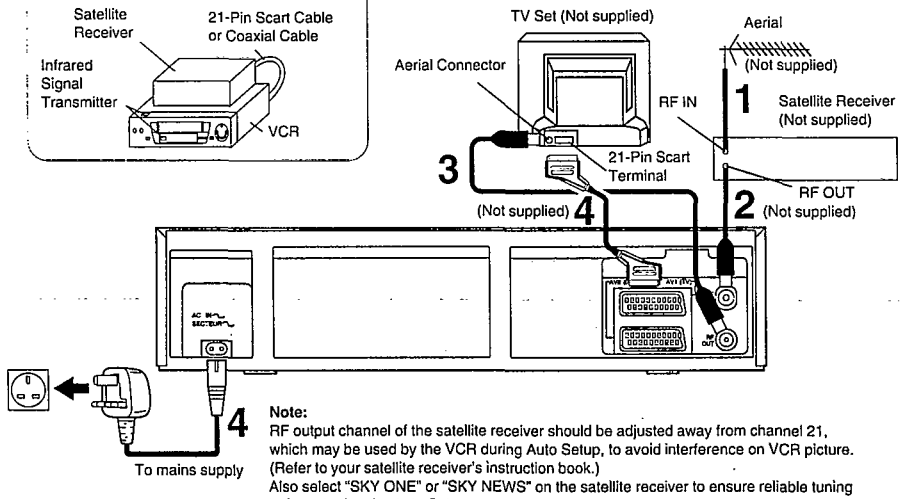
- Set the RF output channel of the VCR to "--" (RF OFF) when the VCR is connected to the TV via the 21-pin scart cable.
  See the bottom section on page 15.
- When a decoder is to be connected in addition to the satellite receiver, read the Operating Instructions accompanying the decoder.
- When the satellite receiver is connected to the AV2 socket, ensure that **AV2 Connection** is set to **VCR/SAT.** (See page 41.)

How to Install

We recommend that the satellite receiver be placed on top of the VCR, positioned so that the infrared signal transmitter is clearly accessible.

Ⓑ By means of RF Coaxial Cable

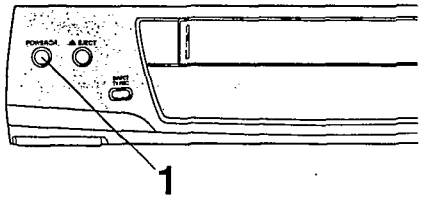
•After making this connection, proceed with **Preset Download** or **Auto Setup** on pages 16 or 17 first, and then with **Satellite Tuning Manually** on page 38 and the **Satellite Settings** on pages 18–20.

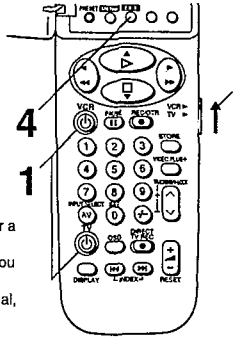


Note:

RF output channel of the satellite receiver should be adjusted away from channel 21, which may be used by the VCR during Auto Setup, to avoid interference on VCR picture. (Refer to your satellite receiver's instruction book.)
Also select "SKY ONE" or "SKY NEWS" on the satellite receiver to ensure reliable tuning before starting the Auto Setup.

Tuning the TV to your VCR





Set the **VCR/TV** switch to **VCR** to use the ∨∧ and the **numeric buttons**.

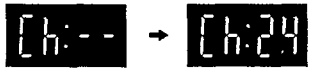
The VCR supplies signals to the TV via an RF coaxial cable (supplied) or a 21-pin scart cable (not supplied).
It is possible to view the video picture on your TV in the same way that you watch TV broadcasts.
If you have connected the VCR to the TV through the 21-pin scart terminal, then you do not need to follow the procedure mentioned below.

Operations

1 VCR TV

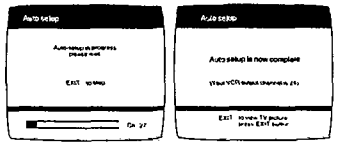
Turn on the VCR and TV.

2 **VCR Display** **Example:**



VCR will start Auto-setup and search for an unoccupied channel for use by the VCR to playback tapes or view TV programmes.
When this is done, the RF output channel will be displayed on the VCR.
- Check that the number of the RF output channel has appeared on the VCR display and then proceed as follows.

3 **On Screen Display**



(During Auto setup) (After Auto Setup)

Set the TV to an unused programme position, such as "0", then tune the TV to the channel number indicated on the VCR (refer to the operating instructions for your TV).
You should then be able to see the screens similar to those shown on the left.
- On Panasonic TV the programme number 0 should be selected to obtain best performance.
- When the VCR is turned on after connecting the aerial lead and the mains lead, Auto setup (Auto tuning and Auto clock setting) starts. (See page 17.)

4 EXIT

Press **EXIT** to leave this screen.

- In some rare cases after Auto-setup, interference may be visible on the picture. To avoid the interference, you can manually adjust the RF output channel a few steps up or down from the current setting.

To change the RF output channel setting, use the remote controller:

1 Keep **MENU** pressed for 5 seconds or more.
- The VCR display changes as in step **2** and the VCR picture on the TV displays this test pattern.

2 Enter the desired channel number (21–69) by using the **numeric buttons** or the ∨ ∧ buttons.
3 Press **STORE** to finish the setting mode.
- Retune your TV to the new RF channel for the VCR.

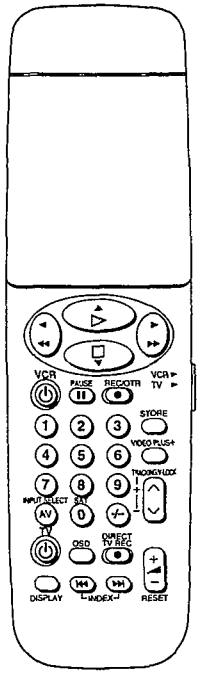
To set the RF output channel of the VCR to "––" (RF OFF) when the VCR is connected to the TV via the 21-pin scart cable.
Press the "0" **numeric button** or the ∨∧ buttons to display "––".

21 ←.....→ 69
(RF OFF)

Preset Download

Preset Download

When connecting the VCR to a **TV equipped with "NEXTVIEWLINK", "Easy Link" or "Megalogic" facility using the fully-wired 21-pin scart cable**, the tuning information can be copied (download) to the VCR from the TV so that the VCR will be tuned to the same stations as your TV.

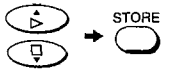


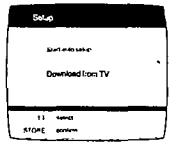
When the VCR has been turned on after connecting to the TV equipped with "NEXTVIEWLINK", "Easy Link" or "Megalogic" facility using the fully-wired 21-pin scart cable, the On Screen Display appears as follow.

On Screen Display

Select **Downlord from TV.**
- When performing **Manual Tuning** described hereafter on page 36, be sure to select **Start auto setup.** This is because when the tuning contents for the TV are changed, this information is downloaded to the VCR again, possibly erasing the independent contents input by Manual Tuning.

Press **STORE** to access.





- Download is started automatically.

- When the downloading has finished, Short Auto Setup is started automatically.

- When Short Auto Setup has finished, the lowest channel position at which a broadcast can be tuned in is received.

Note:
Downloading does not work when the VCR is connected to a TV with the "NEXTVIEWLINK", "Easy Link" or "Megalogic"-logo but without a fully-wired 21-pin scart cable or a TV without the "NEXTVIEWLINK", "Easy Link" or "Megalogic" capability, or connection by RF coaxial lead only.
In this case, perform **Auto Setup** on the next page.

Auto Setup

Auto Setup

When the VCR is connected to a TV without the "NEXTVIEWLINK", "Easy Link" or "Megalogic"-logo, Auto setup is started automatically.
When the VCR is turned on after connecting the aerial lead and the mains lead, Auto setup (Auto tuning and Auto clock setting) starts.

On Screen Display

- The Auto setup is searching for TV station from minimum to maximum and memorizing the data for every programme position.
- The Auto setup takes two or more minutes to complete the search for TV station and the clock setting.
- If the clock setting screen appears after auto setup has been completed, refer to page 42 and proceed with the setting.

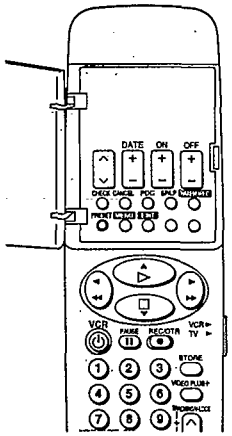
Note:
If VCR is not correctly set by Auto setup, see **Various Settings** on pages 36–39 and 42.

Viewing the TV station list

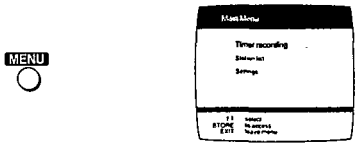
Use the following steps to confirm that the Auto setup is correctly set.

Preparations

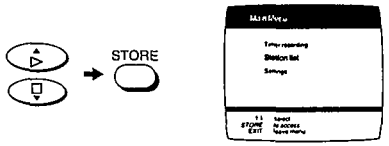
- Confirm that the TV is on and the VCR viewing channel is selected.
- Turn on the VCR.



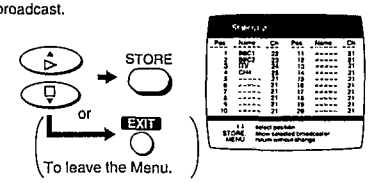
1 Press **MENU**.



2 Select **Station list**.



3 Select the desired TV station, if you want to view the broadcast.



The station names have been entered and set correctly.

When the station names have not been correctly entered and set

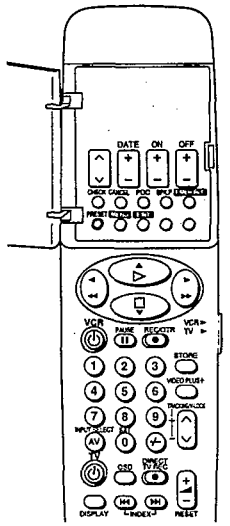
Auto setup is completed.

Perform the settings on page 36.

Satellite Settings

Satellite Setting

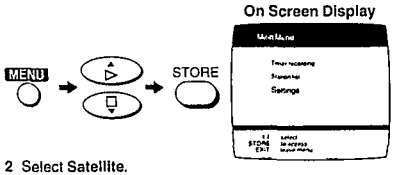
If you have connected a satellite receiver, you must perform the settings outlined below in accordance with the connection method used.



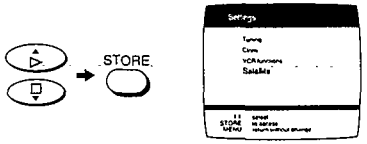
Set the **VCR/TV** switch to **VCR** to use the **numeric buttons**.

1 Press **MENU**, and then select **Settings**.

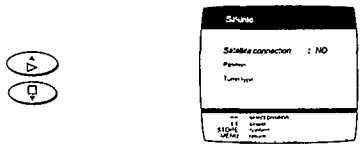
On Screen Display



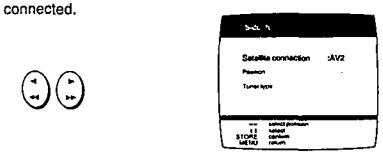
2 Select **Satellite**.



3 Select **Satellite connection**.



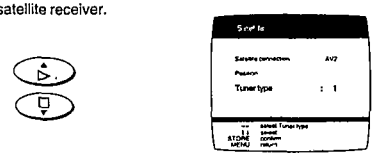
4 Select the position where the satellite receiver is connected.



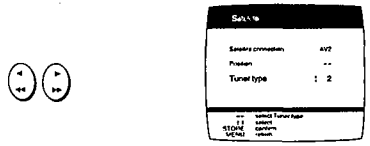
NO: *When the satellite receiver is not connected to* the VCR.
RF: When the satellite receiver is connected to RF IN socket of the VCR.
AV1: When the satellite receiver is connected to AV1 socket of the VCR.
AV2: When the satellite receiver is connected to AV2 socket of the VCR.

- The **Position** item is also automatically set when **RF** has been selected, and cannot be changed here. To change position of satellite channel, refer to **Manual Tuning Procedure** on page 36.

5 Select **Tuner type** by refering to the enclosed satellite receiver listing to find the tuner type number for your satellite receiver.

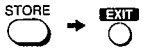


6 Enter the tuner type number by using ◄ ►.



- It is also possible to select by pressing numeric button.

7 Press **STORE**, and then press **EXIT**.



Notes:

- The VCR may not be able to control some makes or *models of Satellite Receiver, due to the choice of* Remote Control coding being beyond our control.
- Check that the satellite receiver can be properly controlled. (Refer to page 20.)

Teaching the VCR your satellite channels

Before proceeding with the Video Plus+ programming, perform the settings given below.

Operations

1 Switch your satellite receiver on and go through each channel making a note of which channel is on which programme position. Your list look something like this.

Programme position	Channel
1	Sky 1
2	Sky News
3	Sky Movies
4	The Movie Channel
5	MTV
etc.	...

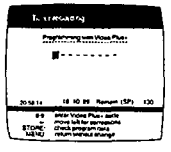
2 Get hold of a Satellite programme listing magazine or a newspaper which gives Video Plus+ codes for satellite channels for that day.

3 Chose any programme that will be broadcast on the channel you've assigned to programme position 1 on your satellite receiver (in our example, Sky 1) and make a note of its Video Plus+ code.

4 Press **VIDEO PLUS+** on your remote controller.
- The Video Plus menu appears on screen display.

VIDEO PLUS+

On Screen Display

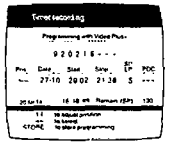


5 Input the Video Plus+ code.
- Ensure that the **VCR/TV** switch is set to **VCR**.

SAT 0 → 9

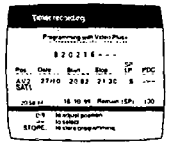
6 Press **STORE**.
- "–:–" appears on the programme position item.

STORE



7 First you have to select position where satellite receiver is connected, e.g. AV1, position 5 from station list.
Key in the number 1 using the remote controller. This is the programme position on the satellite receiver which corresponds with the correct channel (in our example, Sky 1) for the programme you've selected.

SAT 0 → SAT 0 → 1



8 Press **STORE**.

STORE

- When a cassette with an erasure prevention tab is inserted, VCR will go into timer recording standby mode.

9 Press **VIDEO PLUS+** again.

VIDEO PLUS+

The video plus menu reappears. Repeat the same procedure, but this time selecting any programme that is going to be broadcast on the channel you've assigned to programme position 2 on your satellite receiver. (In our example, Sky News)
- When you get to step 7 above, key in the number 2.

SAT 0 → SAT 0 → 2

Timer Recording

Using On Screen Display

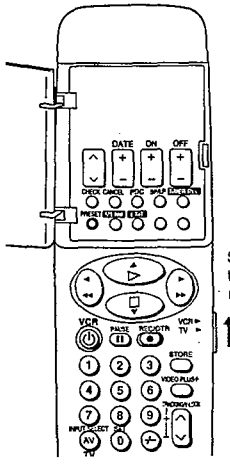
Up to 8 timer programmes can be recorded up to one month in advance by setting the timer, including weekly and daily programmes.

Preparations

- Insert a video cassette with an intact erasure prevention tab.
- Confirm that the TV is on and the VCR viewing channel is selected.

For Example:

Programme position (channel);	2
Date;	27th, October
Starting time;	20:02
Ending time;	21:30
(Present date; 16th, October)	



Set the **VCR/TV** switch to **VCR** to use the **numeric buttons**.

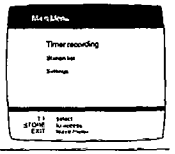
Follow the operation guide on screen display.

Operatons

1 Press **MENU**, and then press **STORE** to access **Timer recording**.
- **Timer recording** is selected normally.

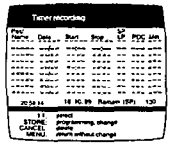
On Screen Display

MENU → STORE

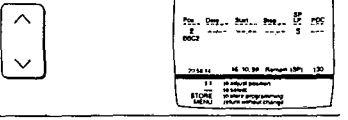


2 Press **STORE** again.
- The unoccupied position (blank line) is selected normally.

→ STORE

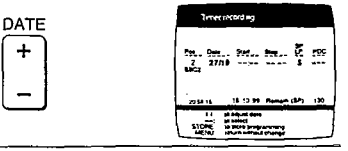


3 Set **Programme position** (channel) "2".
- An alternative method is to press ▲ ▼ ◄ ►.



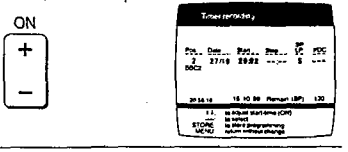
4 Set **Date** "27/10".

DATE



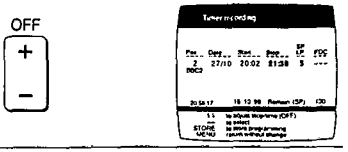
5 Set **Starting time** "20:02".
- When it is kept pressed, the indication changes in 30-minute steps.

ON



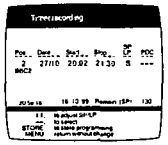
6 Set **Ending time** "21:30".

OFF



7 Select the desired **Tape speed (SP/LP).**

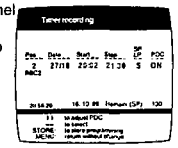
SP/LP



8 Select **PDC ON** or **OFF (---).**

- If PDC is set to **ON**, ensure that the starting time is the same as published time.
- See page 30 for PDC recording.
- During satellite channel timer programming, **PDC** cannot be set to **ON**.

PDC



9 Press **STORE.**

- **For the setting other programmes in succession, repeat steps 2–9.**

STORE

10 To activate timer recording, press **TIMER REC.**

TIMER REC

Weekly Timer Recording

In step 4, select the desired day by pressing ▼ or **DATE –**.

Daily Timer Recording

For this timer function, several groups of days can be selected.

Ⓐ Daily recording from Monday to Friday.

Ⓑ Daily recording from Monday to Saturday.

Ⓒ Daily recording from Sunday to Saturday.

In step 4, select the desired days by pressing ▼ or **DATE –**.

Timer Recording from External Signal Source

If Timer Recording is performed by a unit connected to the AV1 (TV) or AV2 (DECODER/EXT) Sockets, select the A1 or A2 indicator for the programme position.

A1: Through the AV1 (TV) socket.

A2: Through the AV2 (DECODER/EXT) socket.

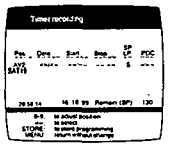
Satellite Channel Programmed Recording

When selecting the programme position (channel), use the numeric buttons to select a satellite channel.

Ensure that the **VCR/TV** switch is set to **VCR**.

SAT 9: SAT (0) → SAT (0) → (9)

SAT 19: SAT (0) → (1) → (9)

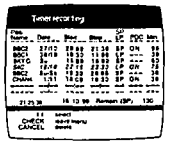


- PDC programming is not possible in conjunction with satellite programmed recording.
- With some satellite receivers, the power remains off for several seconds when timer recording commences. With some satellite receivers, the first several seconds will not be recorded when the timer recording function is used. In these cases, set the start time about 1 minute before the published time to avoid missing the start of the programme.
- With some satellite receivers, the power goes off if the recording is stopped while timer recording is still underway.

Checking a Timer Programme

- *The VCR must be turned on, or the timer recording* indicator "⏲" is lit.
- Confirm that the TV is on and the VCR viewing channel is selected.

Press **CHECK.** CHECK



- On Screen Display may be distorted in the PDC recording standby mode.

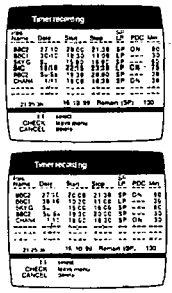
Cancelling a Timer Programme

- *The VCR must be turned on or in timer recording* standby mode.
- Confirm that the TV is on and the VCR viewing channel is selected.

1 Press **CHECK.** CHECK

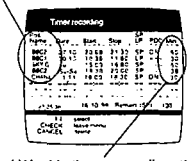
2 Select the desired timer programme.

3 Press **CANCEL.** CANCEL



Notes:

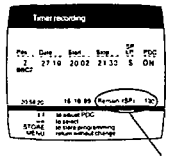
- *Either the Position number or the Station name is* displayed here.



- For Daily and Weekly timer recording, the recording time *for only one recording session is displayed.*

Checking the Remaining tape time for recording:

This displays the remaining time for the inserted tape.



Remaining Time Indicator

- This indicator is not displayed unless the remaining tape time has already been indicated on the VCR display. Refer to page 25.

PDC (Programme Delivery Control)

How to use PDC?

(1) The VCR detects if broadcast stations transmit PDC signal or not at the time of "Auto-setup" only, and stores this information in its memory. If broadcast stations introduce or discontinue PDC transmission later on, "Auto-setup" must be carried out again to update the VCR's memory.

(2) PDC mode will be automatically set to "ON" when using "Video Plus+" codes for timer programming, if the stations have been memorised by the VCR as having PDC transmission. PDC mode will be automatically set to "OFF" if the start time is altered during timer programming.

(3) PDC mode will be automatically set to "---" (no PDC) when using "Video Plus+" codes for timer programming, if the stations have not been memorised by the VCR as having PDC transmission.

(4) PDC mode will be automatically set to "OFF" when timer programming is done, for any station, by the "On-Screen" timer recording method, because the start time can be entered freely by the user. To use PDC recording in this case, if the station transmits PDC signal, set PDC mode to "ON" and ensure that the start time is set to exactly the same as the published time, e.g. in newspapers, magazines, etc. If this is not done correctly, recording will not start.

Notes on PDC recording:

(1) *PDC recording will start approximately some seconds* before the broadcast programme commences and may stop some seconds before or after the end of the programme, depending on the control from the broadcaster.

(2) Normally programmed timer recording data is *automatically cancelled after recording is completed.* Under the following conditions the programmed timer recording data will be automatically cancelled at 4 a.m. of the next day.
- (a) If PDC signal cannot be detected during PDC timer recording, the VCR will perform normal timer *recording (without PDC).*
- (b) If a timer recording is incomplete due to insufficient tape or cancellation by the user.
- (c) If timer recording is still in progress at 4 a.m.
- (d) If the broadcaster transmits a PDC signal to suspend or interrupt the recording.

If these cases, the VCR will remain in the timer standby condition after timer recordings have been completed.

(3) If PDC is set to "ON" manually for the station which does not have PDC transmission, the VCR will perform normal timer recording (without PDC).

(4) *In case of multiple timer programmings, while the* VCR is in timer standby mode the VCR will periodically check PDC status of the programmed stations with PDC in turn for any change in the start time of each programme. But while the VCR is recording a programme, it can only check the PDC status of that *programme being recorded.*

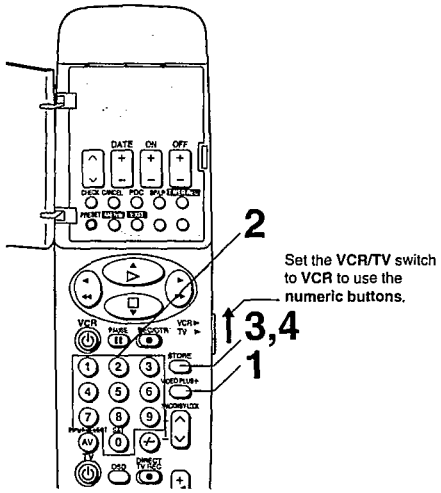
(5) If the actual broadcasting times of timer recordings overlap (regardless of whether they are PDC-controlled), the recording that starts first always has priority, and the recording of the later programme will start only after the first timer recording has finished.

(6) *Some broadcasting stations send signals which* change the programming information (channel, day on which the programme is scheduled to be aired, and its start and end times). In a case like this, the display at the PDC item on the On Screen Display programming screen changes to "ON✳". *When a change has been made in this way, what has* been programmed can be cleared but it cannot be changed.

(7) When the name of a broadcasting station has been changed by manual tuning, the programmed recording may not be performed correctly even when PDC is ON.

Programming the Video Plus+ PlusCode

Programming is now easier than ever: simply enter the PlusCode provided in the programme schedule column carried by newspapers and magazines.
PlusCodes are numbers which are assigned to each programme listed in the TV programme schedule carried in newspapers and TV guides. When these codes are entered and **STORE** is pressed, the codes are converted into the actual programming.



Preparations

- Insert a video cassette with an intact erasure prevention tab.
- Confirm that the TV is on and the VCR viewing channel is selected.
- Ensure that the **VCR/TV** switch is set to **VCR**.

Operations

1 Press **VIDEO PLUS+**.

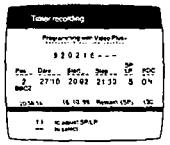
VIDEO PLUS+

2 Enter a Video PlusCode for the TV programme to be recorded.
Example: 920216

3 Press **STORE**.

STORE

On Screen Display



- To extend the ending time or to make any corrections, use buttons ▲ ▼ ◀ ▶, ∨ ∧, **DATE**, **ON**, **OFF** or **PDC**.
- PDC will be set to **ON** automatically if the station has been memorised as having PDC transmission at the time of Auto setup.
  PDC can be set to **OFF** manually, if desired, by moving the highlight to PDC then using the **PDC** button.

When programming for the first time using a Video Plus+ code, "––" will appear for the programme position because the station has been manually tuned:
In this case, select the programme position of your VCR which receives the TV station you entered the Video Plus+ PlusCode for at step **2** using button ▲ ▼ or ∨ ∧.

- After several seconds have elapsed, the message display at the bottom of the OSD is replaced by the operation guide display.
- Once programming is performed after the programme position has been selected here, the guide channel will be automatically stored so that the correct position will appear when the Video Plus+ PlusCode for this station is next entered.

4 Press **STORE** once more to confirm.
- The VCR will go into timer recording standby mode.

STORE

Note:
The VCR will automatically change to the timer recording standby mode after about 1 minute, if **STORE** is not pressed.

5 When programming two or more programmes, repeat steps **1–4**.

Notes:
- To select the desired tape speed, press **SP/LP** button after step **3**.
- To release from the standby mode, press **TIMER REC**.
- When the PlusCode is used for programming, the recording time may be slightly longer than the actual programme time.
- The procedures for checking and cancelling a timer programme are the same as on page 29.

Editing

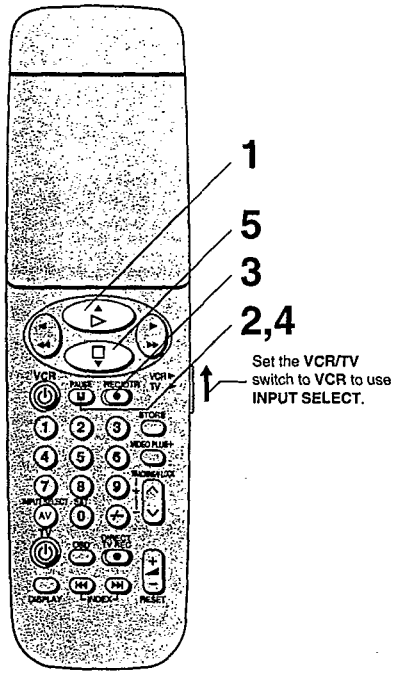
Assembly Editing

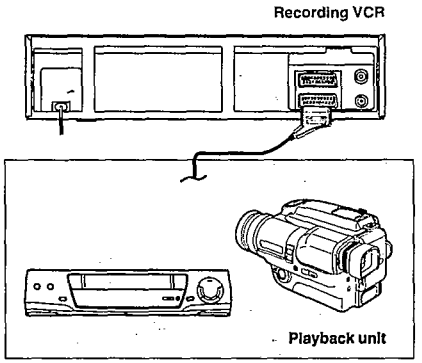
This function can be used to make up an edited tape from other recordings or video sources.

A new scene can be added to the end of a previous one.

Preparations

- Connect a movie camera or another VCR to this VCR as shown.
- Insert a recorded cassette tape with an intact erasure prevention tab.
- Select the video source required by pressing **INPUT SELECT** to set A1 or A2.
  Ensure that the **VCR/TV** switch is set to **VCR**.
  A1: Through AV1 (TV) socket.
  A2: Through AV2 (DECODER/EXT) socket.





Operations

1 Search for the end of the previous recording.

2 Press **PAUSE**.

PAUSE

3 Press **REC/OTR** to switch the VCR from the pause mode to the recording standby mode.

REC/OTR

4 Start the new recording by pressing **PAUSE** again.

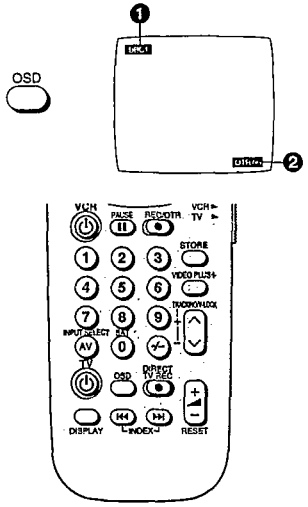
PAUSE

5 Press □ **(STOP)** to stop recording.

Other Functions

On Screen Display

Press **OSD** to make the On Screen Display appear on the TV screen.



❶ **TV station**

❷ **OTR indication**

Note:
When the item **"On screen display"** is set to OFF, the On Screen Display (except for the error message) will not appear. (See page 40.)

NTSC Playback

Tapes recorded in the NTSC system can be played back with this VCR via a PAL system TV set.

- The playback picture may roll up or down. If the TV set is equipped with a V-HOLD control, it may be possible to stop the picture movement by adjusting this control.
- Depending on the TV set used, the picture may be in black and white. However, this is not an indication of a malfunction.

VHS Index Search System

It is very easy to find the beginning of each recording, because a special index signal is recorded at the start of each recorded segment on the tape.

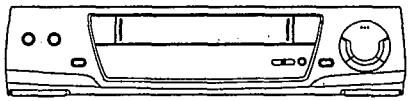
Recording Index Signals
Index signals are recorded in following cases.
- When a recording is started by pressing **REC/OTR**.
- When timer recording is activated.

For example:
Searching for the 2nd recorded segment in the forward direction.
Press **INDEX** ▶▶I twice during normal playback or stop mode.

Display Symbol

- After finding the specific recorded segment, playback starts automatically.
- For the reverse direction, press **INDEX** I◀◀.
- Up to 20 programmes can be searched for in both directions.
- When the opposite **INDEX** button is pressed, the number shall be decreased till 1.
- The figure on the display is decremented by 1 each time an index signal is located. Bear in mind that the display will be decremented in this way even while either **INDEX** button is being pressed.
- The INDEX search function can only work correctly, if the index signals are spaced at least 3 minutes apart in the SP mode and 5 minutes apart in the LP mode.

Other Automatic Functions



Automatic Playback
When a cassette without an erasure prevention tab is inserted, the VCR starts playback automatically.

VCR-off Playback
When the VCR is off, an inserted cassette can be played back by pressing ▷ **(PLAY)**.

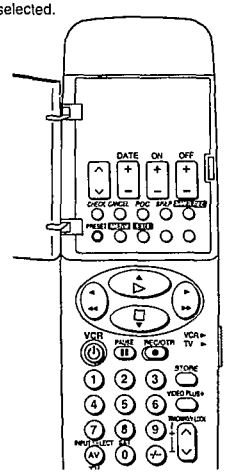
Automatic Rewinding
When the tape reaches its end during recording (except for timer recording) or playback, it will automatically be rewound to the beginning.
During OTR, this function will not work.

Automatic Switching Off and Ejection
When the VCR is switched off, and inserted cassette can be ejected simply by pressing **EJECT**. The VCR will eject the cassette and automatically turn itself off again.

Storing TV Broadcasts into your VCR

Introduction
The VCR is fitted with its own tuner (just like a normal TV set) and can be pre-set to receive up to 99 TV broadcast stations.
When your video cassette recorder is plugged in for the first time, the Auto setup feature will tune in your channels automatically.
However, under certain circumstances in some transmission areas certain channels may not be assigned a channel name or their normal channel position. If this is the case they will need to be tuned manually. If Auto setup is not successful, please follow the steps below.

Preparation
Confirm that the TV is on and the VCR viewing channel is selected.



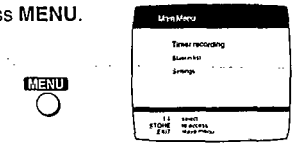
Set the **VCR/TV** switch to **VCR** to use the **numeric buttons**.

Manual Tuning Procedure

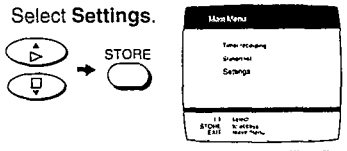
Follow the operation guide on screen display.

Operations

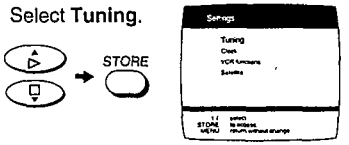
1 Press **MENU**.



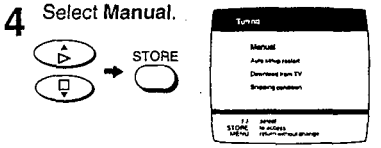
2 Select **Settings**.



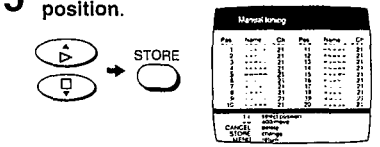
3 Select **Tuning**.



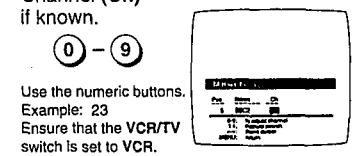
4 Select **Manual**.



5 Select desired **Programme position**.



6 Select the Signal Transmission Channel **(Ch)** if known.



Use the numeric buttons.
Example: 23
Ensure that the **VCR/TV** switch is set to **VCR**.
- Use ▲ ▼ to search for the station if channel number is not known.

7 Press **MENU**, and then press **EXIT**.
- Repeat steps **5** to **7** if manual tuning for other station is required, before pressing **EXIT**.

Channel Plan

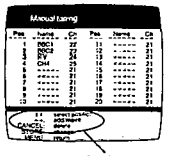
VHF	UHF
—	21–69

Note:
When **Preset Download (Download from TV)** has been executed, do not perform Manual Tuning.
This is because when the tuning contents for the TV are changed, this information is downloaded to the VCR again, thereby erasing the independent contents input by Manual Tuning.

When changing (moving) the programme position, adding "Blank" positions and deleting stations:

These operations can be performed easily by following the indications of On Screen Display.

On Screen Display



Indications

Press ▲ or ▼ to select the desired programme position (station), and then follow the steps indicated below.

←: Press ◄ to add "Blank" position.

→: Press ► to change (move) the programme position.

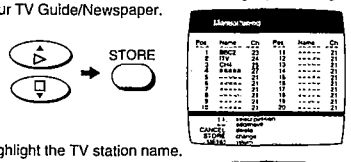
CANCEL: Press **CANCEL** to delete the stations.

- These indications do not appear after performing **Preset Download (Download from TV)**.

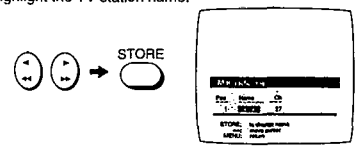
Entering the Station Name

Follow the steps 1 to 4 on page 36.

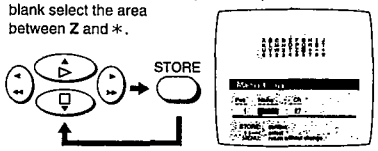
5 Select the station(s) named ＊＊＊＊＊ for which you wish to setup name.
Establish which channel you are viewing, by checking your TV Guide/Newspaper.



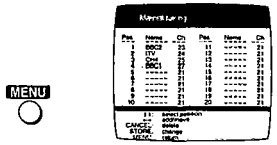
6 Highlight the TV station name.



7 Enter characters into all five ＊＊＊＊＊ positions, from the table using the arrows and press **STORE** after each character. Use blank space if required, to enter a blank select the area between **Z** and ＊.



8 Press **MENU** once. If you wish to change or setup any other TV station names, repeat steps **5→8**.



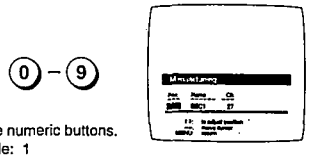
9 Press **EXIT**.

Changing the Programme Position

Follow the steps 1 to 4 on page 36, then follow the example below.

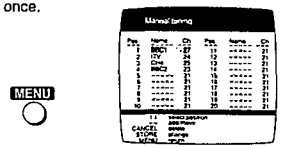
5 Select the station(s) named "BBC1".

6 Select the number location you want to set the channel.



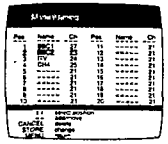
- Use the numeric buttons.
  Example: 1
  Ensure that the **VCR/TV** switch is set to **VCR**.

7 Press **MENU** once.



8 To amend other programme positions repeat steps **5→7**.

9 When correctly tuned your station list will look like this. (Channel information will vary.)



- This is needed for using Video Plus+ PlusCodes correctly.

10 Press **EXIT**.

Notes:

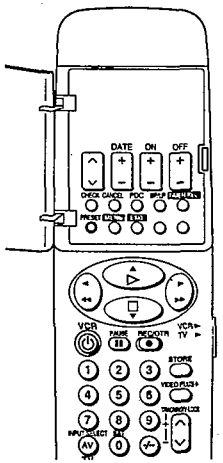
- When channels have been set with manual tuning, the channel position will need to be entered in the highlighted box the first time Video Plus+ is used.
- Any channel which receives satellite broadcasts is set using the special name of **"SAT ___"**. The **"SAT ___"** name should not therefore be changed.
  If a channel name is to be changed in order to use that channel as an ordinary channel instead of receiving the broadcasts of the satellite channel, first select a setting other than **"RF"** for **"Satellite connection"** in **"Satellite"** on the OSD menu **"Settings"** (see page 18), and then proceed with Manual Tuning.

Satellite Tuning Manually

This section describes method for tuning VCR to a satellite receiver which has been added to your system after Auto setup has been done previously. If AV connection (connection by means of a 21-pin scart cable) is used, then this procedure is not necessary.

Preparations

- Confirm that the TV is on and the VCR viewing channel is selected.
- Turn on the VCR.
- Turn on the satellite receiver and select "SKY ONE" or "SKY NEWS" station.



Set the **VCR/TV** switch to **VCR** to use the **numeric buttons**.

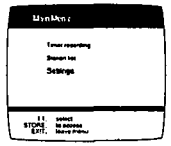
Follow the operation guide on screen display.

Operations

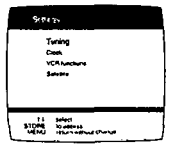
1 Press **MENU**.

2 Select **Settings**.

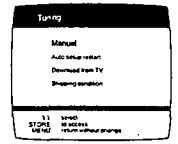
On Screen Display



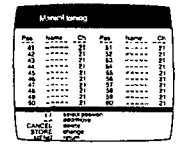
3 Select **Tuning**.



4 Select **Manual**.



5 Select unoccupied **Programme position**.



6 Select a signal transmission channel **(Ch)** on which satellite broadcasts can be viewed.

- Ensure that the **VCR/TV** switch is set to **VCR**.

Use the numeric buttons.
Example: 35

- Or ▲ ▼ to search for satellite signal.

7 Select the TV station name **(Name)** item.

8 Enter **"SAT ___"**.

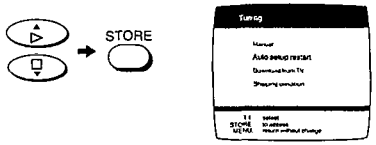
- "___" indicates two blank spaces. Enter the space to the right of the "Z" on the keyboard.
- **"SAT"** is a special term; use it only when a satellite receiver is connected.
- If **"SAT"** is already displayed, this step is unnecessary.

9 Press **MENU**, and then press **EXIT**.

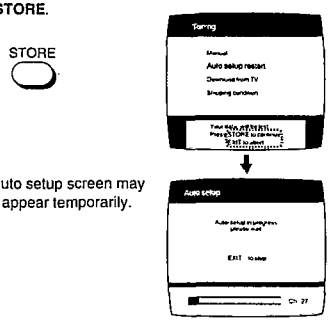
Auto Setup Restart

If the VCR is moved to a different TV transmission area, you may have to retune your VCR. Follow the procedure below.
Follow the steps 1 to 3 on page 36.
4 Select **Auto setup restart**.

On Screen Display



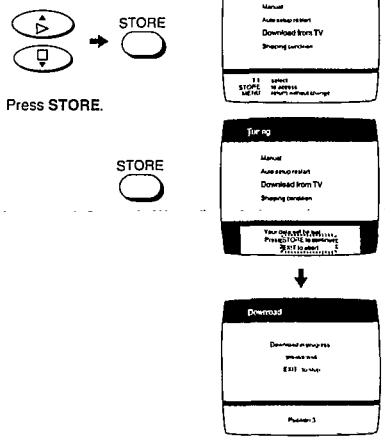
5 Press **STORE**.



- The auto setup screen may fail to appear temporarily.

Download from TV

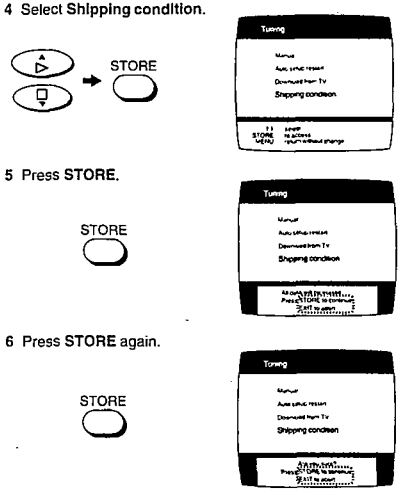
To perform the downloading again, follow the procedure below in the stop mode.
Follow steps 1 to 3 on page 36.
4 Select **Download from TV**.



5 Press **STORE**.

Shipping Condition

If you want to return the VCR to the factory-preset condition, follow the procedure bellow.
Follow the steps 1 to 3 on page 36.
4 Select **Shipping condition**.



5 Press **STORE**.

6 Press **STORE** again.

- Since the RF output channel is initialized to 21 when Shipping Condition is executed, the TV picture may fail to appear.

Note:
To re-tune the VCR, disconnect and then reconnect the mains lead. The RF output channel is now searched automatically. If the VCR is off, turn on the VCR and then repeat the procedures on pages 15–17.

Setting the Clock of your VCR

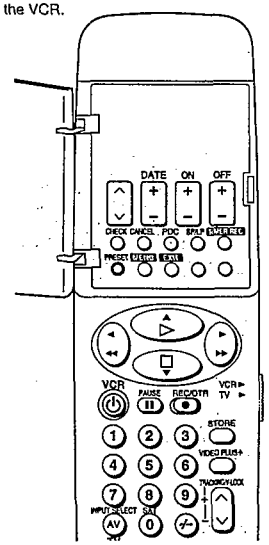
The built-in clock is used to activate the timer for automatic recording and must be set to the correct time.

The built-in digital clock employs the 24-hour system.

If VCR is not correctly set by Auto setup, follow the procedure below.

Preparations

- Confirm that the TV is on and the VCR viewing channel is selected.
- Turn on the VCR.



Manual Clock Setting

Follow the operation guide on screen display.

Operations

1 Press **MENU**, and then select **Settings**.

2 Select **Clock**.

3 Select **Manual setting**.

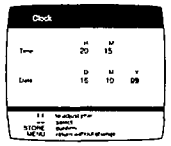
4 Set **Time (H/M)**.
- When it is kept pressed, the indication changes in 30-minute steps.

5 Set **Date (D)**.

6 Set **Month (M)**.

7 Set **Year (Y)**.

On Screen Display



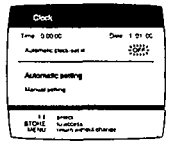
8 Press **STORE**.
- The clock will start.

9 Press **EXIT**.

Automatic Clock Setting

Follow steps 1 to 2 of the above procedure.

3 Select **Automatic setting**.

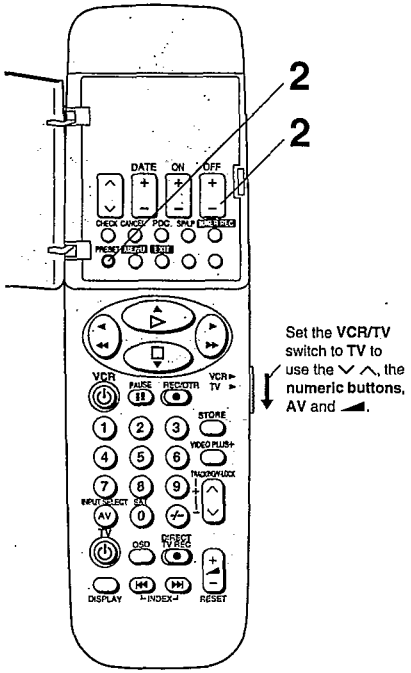


4 Press **STORE**.
- The clock is set automatically.

Notes:
- The clock operates for at least 60 minutes by its backup system in the event of power failure.
- When the item **"Automatic clock-set is"** is ON, on the on screen display, Automatic time correcting function is activated every day.
  The Automatic time correcting function will only work when the VCR is in standby. This function will not work during timer recording standby mode.

Setting the Remote Controller for Operation of your TV

You can operate the TVs of the manufacturers listed on the next page with the remote controller after setting it.



Set the **VCR/TV** switch to **TV** to use the ∨ ∧, the **numeric buttons**, **AV** and ◢.

Preparation

Install the batteries in the remote controller.

Operations

1 Turn on the TV.

2 Press **OFF** "+" or "−" slowly and accurately while holding down **PRESET**. Each time either "+" or "−" is pressed, the number changes in the following sequence.

- When "+" is pressed: 1→2→...30→1→...
- When "−" is pressed: 30→29→...1→30→...
- The TV will switch to standby when you reach the number matching the manufacturer number of your TV. The manufacturer number is not displayed.
- Set **VCR/TV** switch to **TV**, otherwise you cannot perform TV operations using the ∨ ∧, the **numeric buttons**, **AV** and ◢ of this remote controller.

Note:
Some TV models cannot be operated using this remote controller.

Number	Manufacturer
1–4	Panasonic
5	GRUNDIG, Blaupunkt, SIEMENS
6	PHILIPS, LOEWE, SAMSUNG, RADIOLA, DUAL, PYE, BUSH, GOODMANS, ELEMIS, CURTIS, SBR
7	SONY
8	METZ
9	FERGUSON, THOMSON, TELEFUNKEN, GOODMANS, SABA
10	FERGUSON, THOMSON, TELEFUNKEN, GOODMANS
11	FERGUSON, THOMSON, TELEFUNKEN, GOODMANS, SABA
12	FERGUSON, TELEFUNKEN, GOODMANS, SABA
13	TELEFUNKEN
14	FERGUSON, THOMSON, TELEFUNKEN, GOODMANS, SABA
15	FERGUSON, THOMSON, TELEFUNKEN, GOODMANS, SABA, NORDMENDE, BRANDT
16	TELEFUNKEN
17, 18	HITACHI
19	SIEMENS
20	SAMSUNG
21	ITT, NOKIA, SELECO
22	NOKIA, SALORA
23	MIVAR
24	TOSHIBA
25	SANYO
26	SHARP
27	JVC
28	MITSUBISHI
29, 30	HITACHI

When a TV manufacturer has multiple numbers
For example, When the number is 1, 2, 3 or 4 (Panasonic):
When the TV switches to standby in step **2** on previous page, turn it back on and adjust the TV volume using this remote controller. The volume can be adjusted if the number matches the manufacturer of TV.
If it is not possible to adjust the TV volume, repeat step **2** to match the manufacturer of TV again until the volume can be adjusted.

Note:
FERGUSON, THOMSON, TELEFUNKEN, GOODMANS, SIEMENS, SAMSUNG, NOKIA, SABA and HITACHI have multiple numbers. Although some models may operate with any of these numbers, other models may operate with only one number. Check each number in turn, and set the optimal number.

SECTION 2
ADJUSTMENT PROCEDURES

2-1. DISASSEMBLY METHOD

2-1-1. DISASSEMBLY FLOW CHART

This flow chart indicates disassembly steps of the cabinet parts and the circuit boards in order to gain access to part for servicing. When reassembling, perform the steps in the reverse order.

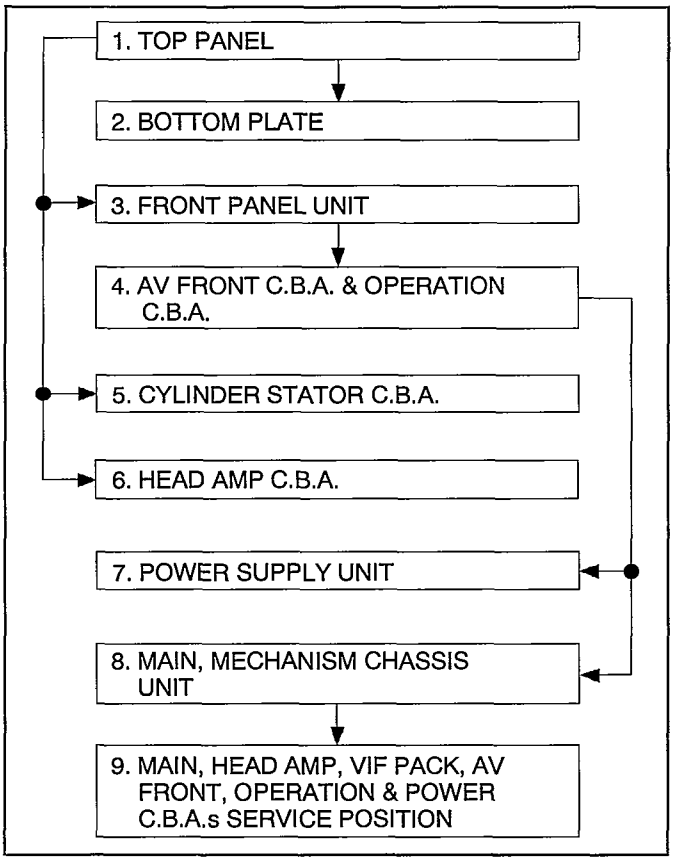

1. TOP PANEL
2. BOTTOM PLATE
3. FRONT PANEL UNIT
4. AV FRONT C.B.A. & OPERATION C.B.A.
5. CYLINDER STATOR C.B.A.
6. HEAD AMP C.B.A.
7. POWER SUPPLY UNIT
8. MAIN, MECHANISM CHASSIS UNIT
9. MAIN, HEAD AMP, VIF PACK, AV FRONT, OPERATION & POWER C.B.A.s SERVICE POSITION

Fig. D1

1. REMOVAL OF THE TOP PANEL

Remove ..... 4 Screws (A)

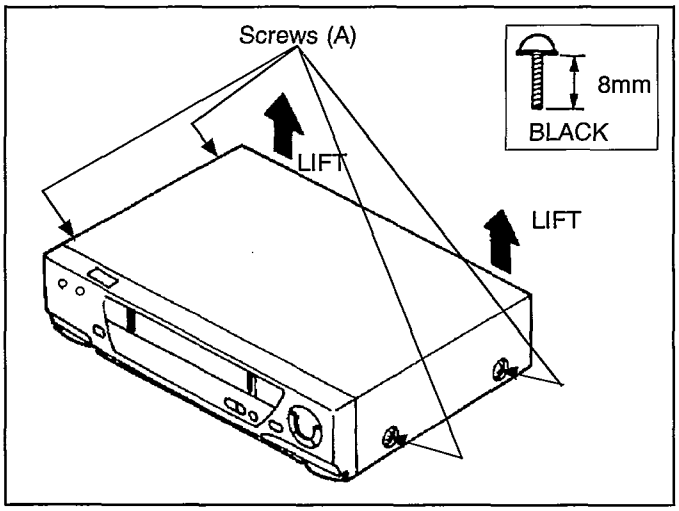


Fig. D2

2. REMOVAL OF THE BOTTOM PLATE

Unlock ..... 6 Tabs (B)

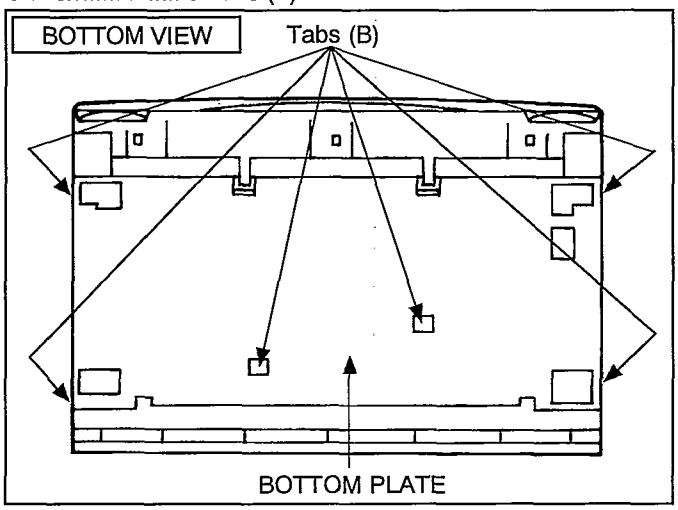


Fig. D3

3. REMOVAL OF THE FRONT PANEL UNIT

Unlock ..... 9 Tabs (C)

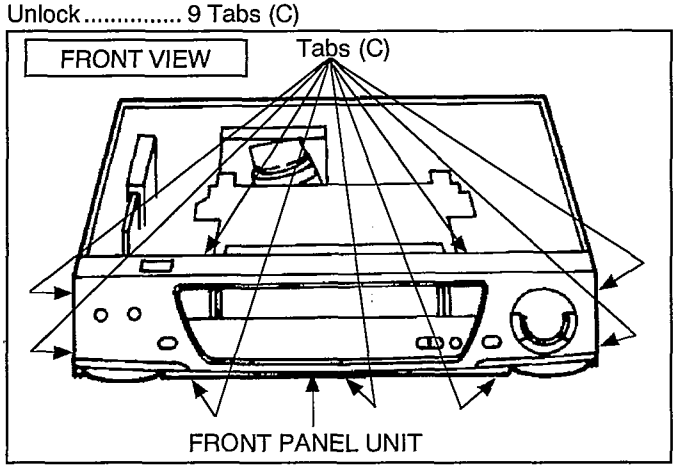


Fig. D4

4. REMOVAL OF THE AV FRONT & OPERATION C.B.A.

Disconnect ..... Connector P6501(D)
Connector PS6501(E)
Cnnector P6601(F)
Unlock ..... 2 Tabs (G)
Tab(H)

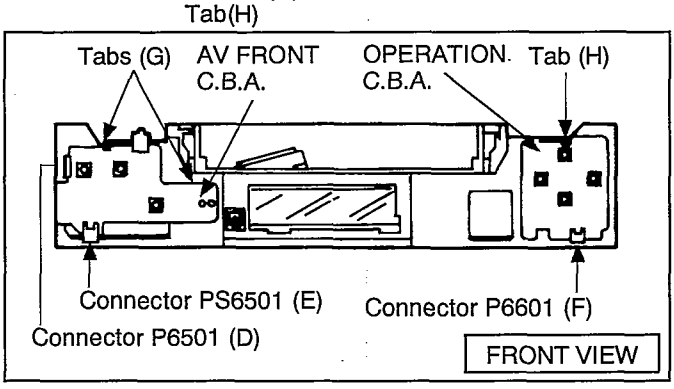


Fig. D5

5. REMOVAL OF THE CYLINDER STATOR C.B.A.

Remove ..... 2 Screws (I)

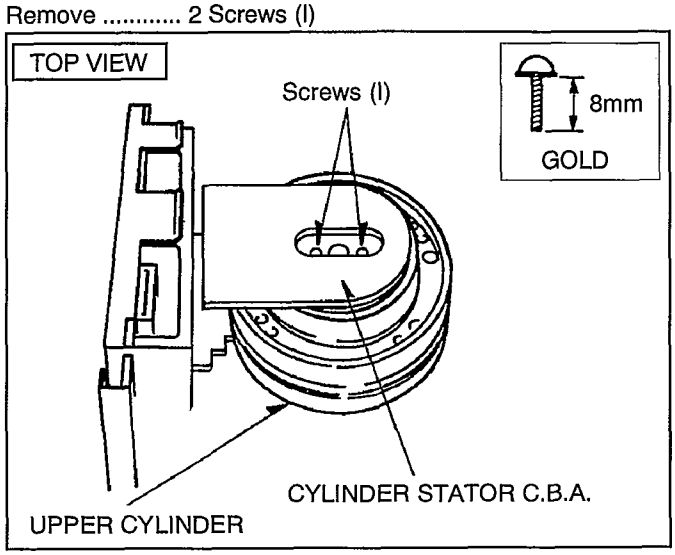


Fig.D6

<6> REMOVAL OF THE HEAD AMP C.B.A.

Remove ..... 2 Screws (J)
Disconnect..... Connector PS502 (K)
FLAT CARD CABLE (L)

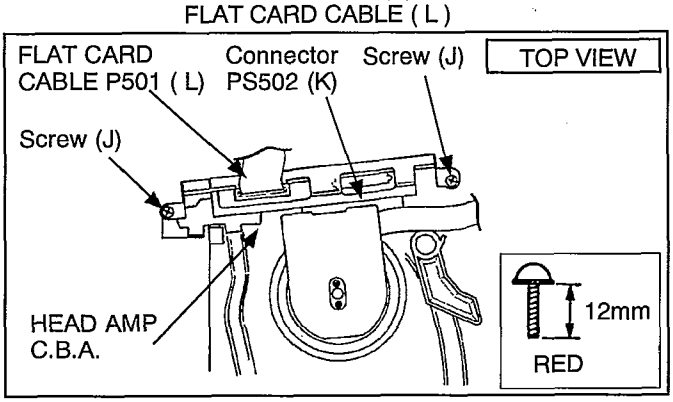


Fig. D7

7. REMOVAL OF THE POWER SUPPLY UNIT

Unlock..... 3 Tabs (M)
Unlock..... 2 Tabs (N)
Disconnect..... Bridge connector (O)

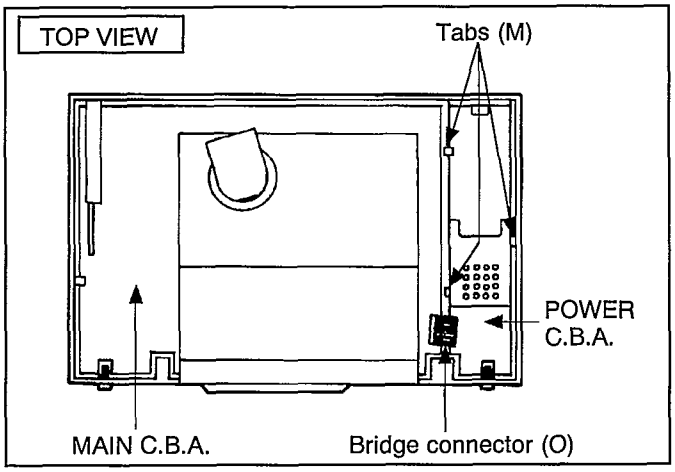


Fig. D8-1

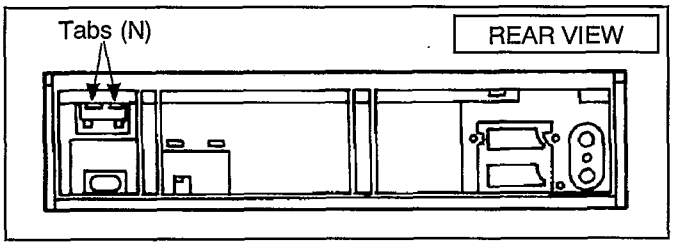


Fig. D8-2

8. REMOVAL OF THE MAIN C.B.A. & MECHANISM CHASSIS UNIT

MECHANISM UNIT
Remove ..... 3 Screws (P)

MAIN C.B.A.
Unlock..... Tab (Q)
Tab (R)

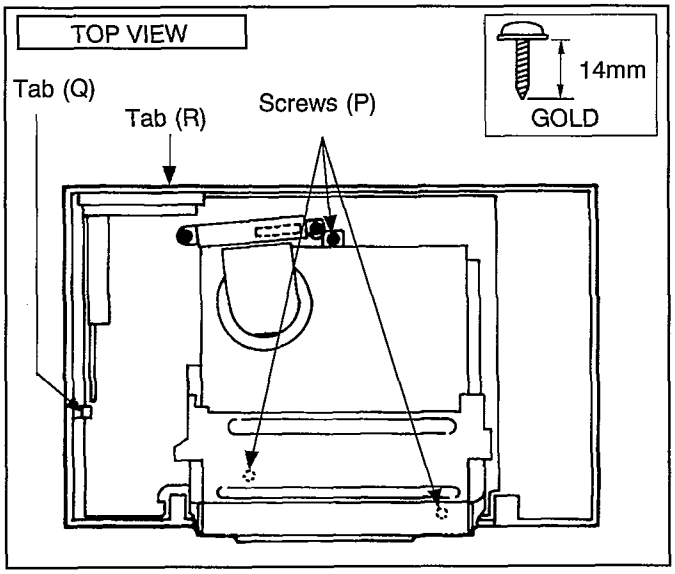


Fig. D9

9. MAIN, HEAD AMP, VIF PACK, AV FRONT, OPERATION & POWER C.B.A.s SERVICE POSITION

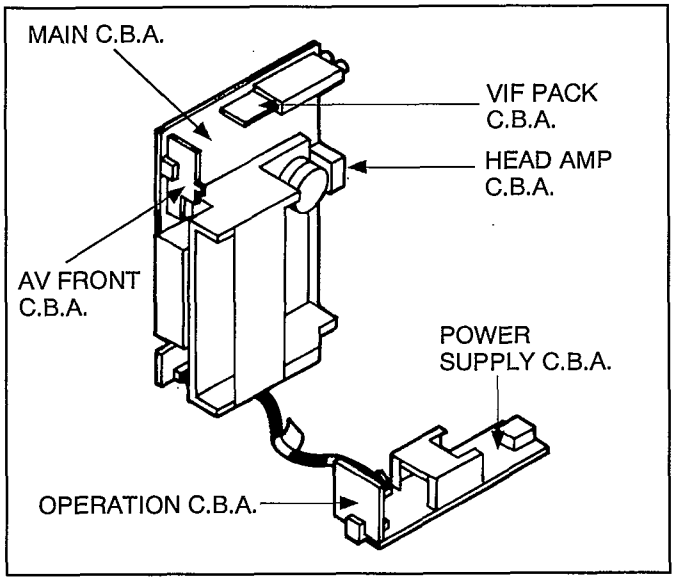
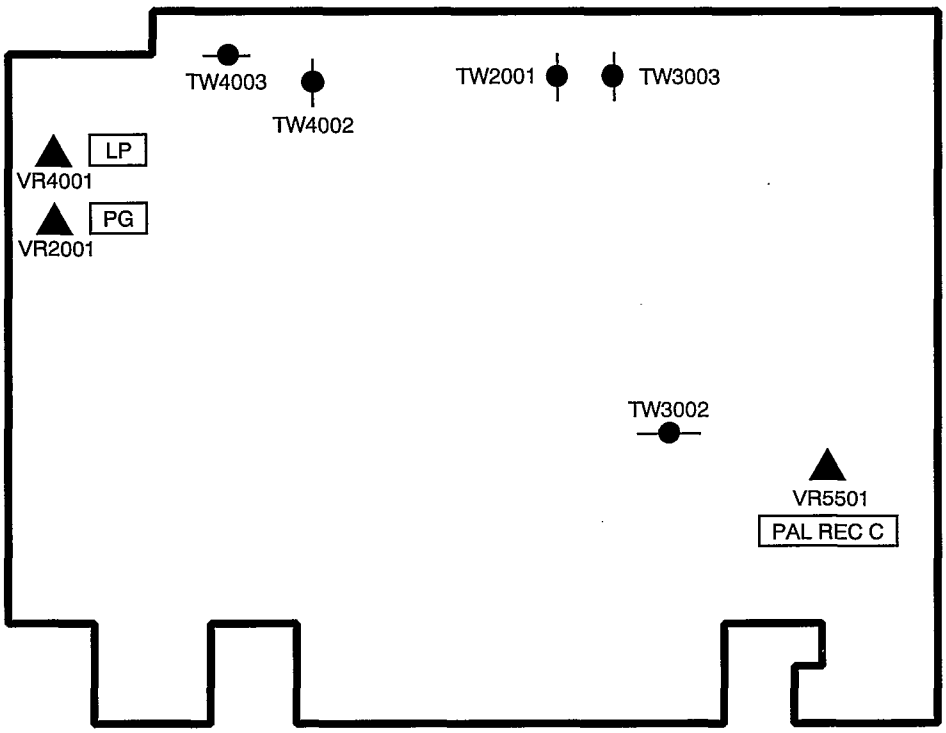


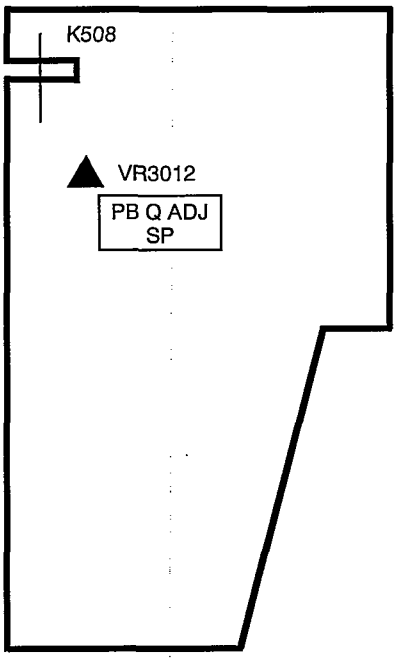
Fig. D10

LOCATION OF TEST POINTS & CONTROLS

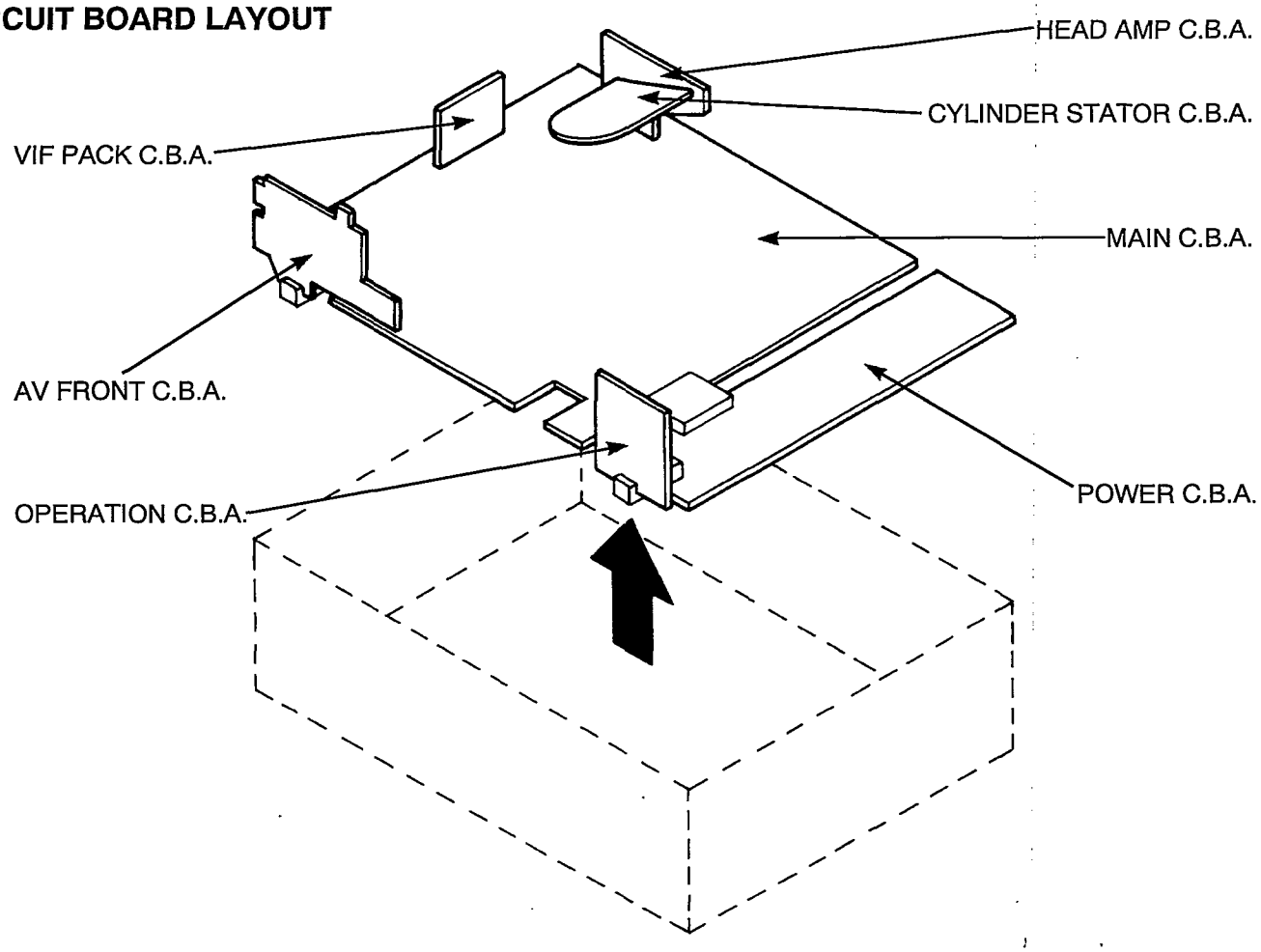
MAIN C.B.A.



HEAD AMP C.B.A.



CIRCUIT BOARD LAYOUT



2-2. MECHANICAL ADJUSTMENT PROCEDURES

Refer to the K-Mechanism Service Manual (Order No.:VRD9307M131).

CAUTIONS:

To turn on the Adjustment Mode for Tape Interchangeability, connect a Jumper Wire (K508) which has been cut.
After finishing the adjustment, disconnect Cut jumper Wire.

2-3. ELECTRICAL ADJUSTMENT PROCEDURES

This section provides complete adjustment procedures required for electric circuits of VCR.

2-3-1. TEST EQUIPMENT

To perform electrical adjustments following equipment is required.

1. Dual-Trace Oscilloscope. (More than 35 MHz)
   Voltage Range : 0.005 – 5 V / div
   Frequency Range : DC – 35 MHz
   Probes : 10:1
2. Frequency Counter.
   Frequency Range : 0 – 10 MHz
   Probes : 1:1
3. Universal Counter.
4. Video Sweep Generator.
5. Sine Wave Generator.
6. Video Pattern Generator.
7. VHS Alignment Tape. (VFJ8125H3F)
8. VHS Blank Tape.
9. Plastic Tip Driver.
10. Vacuum Tube Volt Meter. (V.T.V.M)
11. Monitor.
12. Digital Voltmeter.
13. Power Supply.

2-3-2. HOW TO READ ADJUSTMENT PROCEDURES

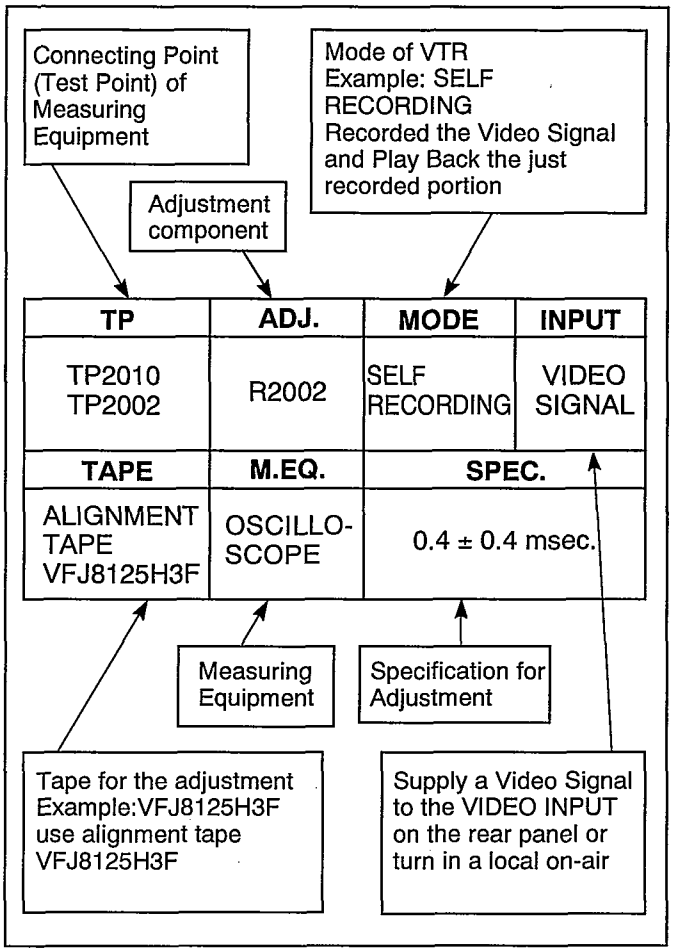


Fig.E1

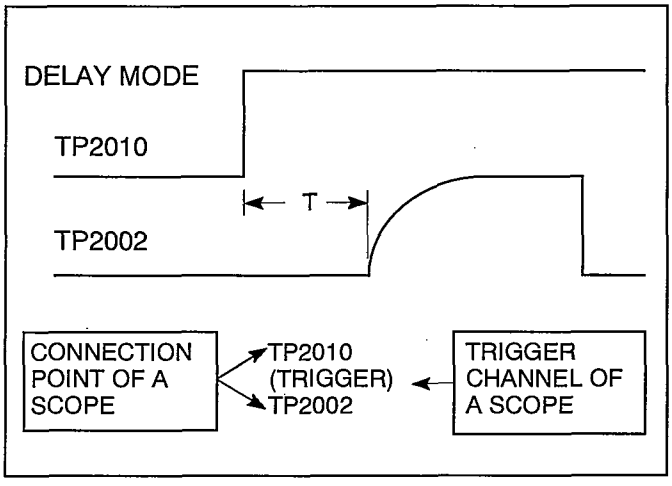


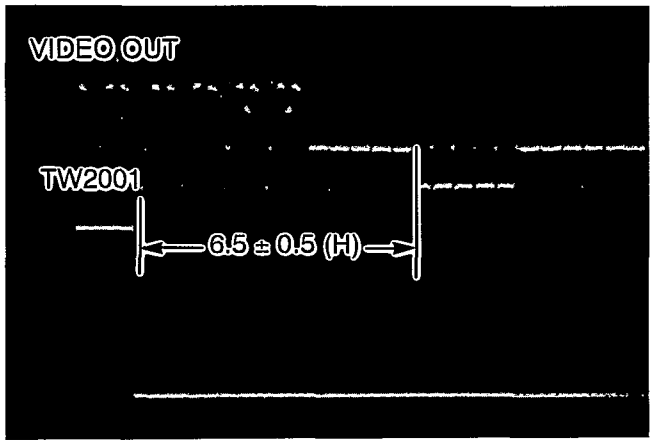
Fig.E2

SERVO SECTION

2-3-3. PG SHIFTER ADJUSTMENT

TP	ADJ.	MODE	INPUT
VIDEO OUT TW2001	VR2001	PLAYBACK	
TAPE	**M.EQ.**	**SPEC.**	
ALIGNMENT TAPE VFJ8125H3F	OSCILLO-SCOPE	6.5 ± 0.5 (H)	

1. Connect the oscilloscope to TW2001(H.SW) and VIDEO OUT.
2. Playback the alignment tape.
3. Adjust VR2001 until the phase difference between falling edge of Head SW pulse and V-Sync is 6.5 ± 0.5 (H).



VIDEO OUT
TW2001 H. SW

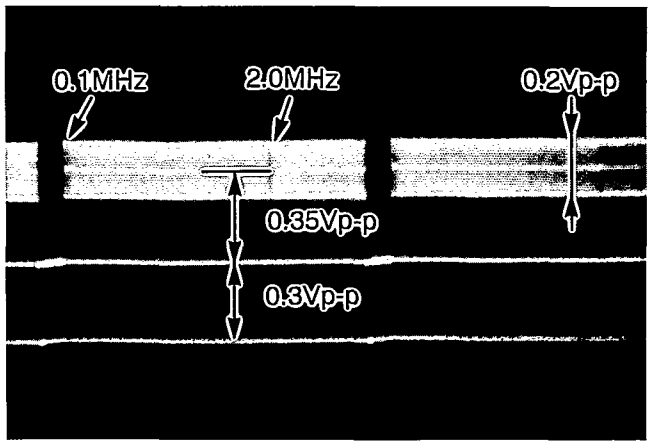
Fig.E3

2-3-4. VHS FREQUENCY RESPONSE ADJUSTMENT

TP	ADJ.	MODE	INPUT
VIDEO OUT	VR3012	SELF RECORDED PLAYBACK	VIDEO SWEEP SIGNAL (Shown in Fig. E4)
TAPE	**M.EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO-SCOPE/ VIDEO SWEEP GENERATOR	0 ± 1 (dB) (90 – 110%)	

Note: Set the Video Sweep Signal as shown in Fig. E4.

1. Supply DC 1.6V to TW3002.
1. Record and playback video sweep signal.
2. Adjust VR3012 until the ratio between 0.1MHz and 2.0MHz is 0 ± 1 (dB) (90 – 110%).



CONDITION : BURST SIGNAL OFF
75 ohm TERMINATED

Fig.E4

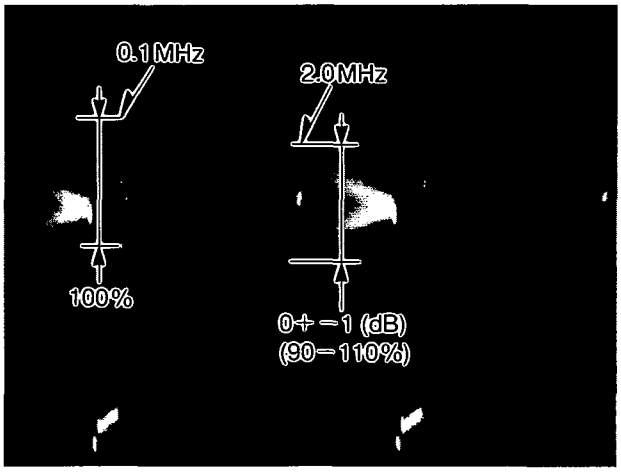


Fig.E5

2-3-5. RECORDING CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TW3003	VR5501	RECORDING	COLOUR BAR
TAPE	**M.EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO-SCOPE	REC-C level / REC-Y level = −12.2 ± 0.5(dB) (23 – 26%)	

1. Connect a jumper wire (K508) which has been cut as shown in Fig S14 on page 1-5.
2. Record the PAL colour bar.
3. Connect the oscilloscope to TW3003.
4. Measure the amplitude of sync tip portion. (REC-Y output Level)
5. Place the unit in STOP mode.
6. Adjust VR5501 until the amplitude of Cyan is following specification.

$$20 \log \left(\frac{\text{REC-C level}}{\text{REC-Y level}} \right) = -12.2 \pm 0.5(\text{dB}) \quad (23 - 26\%)$$

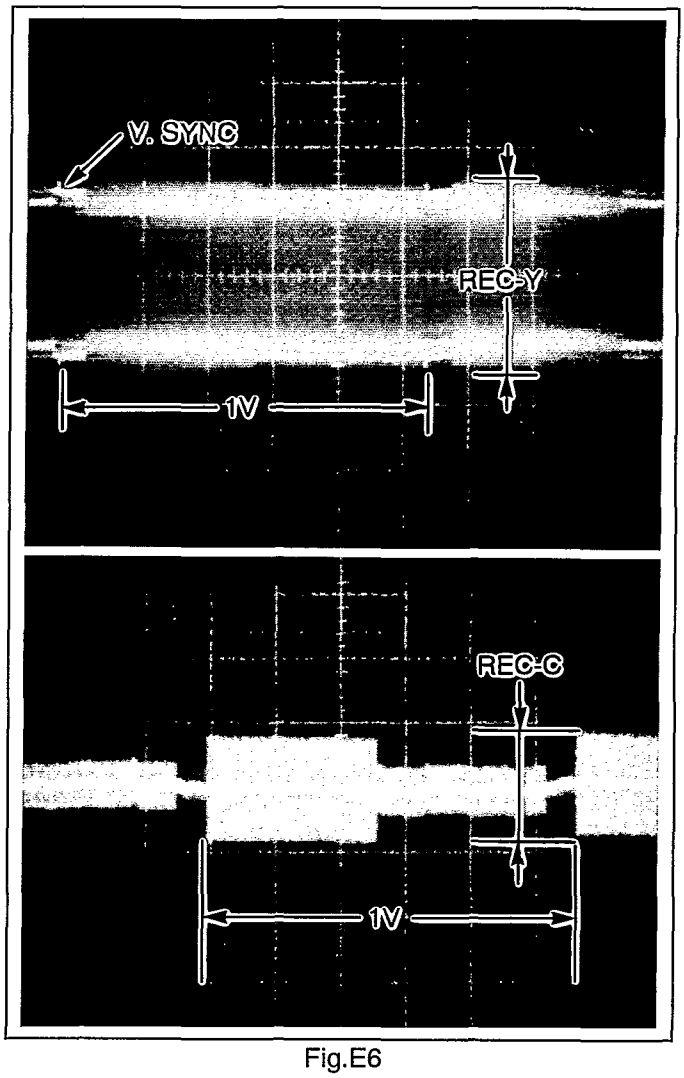


Fig.E6

2-3-6. BIAS CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TW4002 (HOT) TW4003 (GND)	VR4001	RECORD-ING	
TAPE	**M.EQ.**	**SPEC.**	
BLANK TAPE	DIGITAL VOLTMETER	2.6 ± 0.1 (mV rms)	

SECTION 3
BLOCK DIAGRAMS & SCHEMATIC DIAGRAMS

3-1. ABBREVIATIONS

443NT [L]	4.43 NTSC Ⓛ	BIL. [H]	BILINGUAL Ⓗ
A. COMP	AUDIO COMPONENT SIGNAL	BIL/M1[L]	BILINGUAL Ⓛ
A. COMPO	AUDIO COMPONENT SIGNAL	BS CLOCK	BS CLOCK
A. D.P [L]	AUDIO DUBBING PAUSEⓁ	BS DATA	BS DATA
A. D/L [L]	AUDIO DUBBING PAUSEⓁ	BS LCH IN	BS L CHANNEL INPUT
A. DEF [S]	AUDIO DEFEAT	BS MIX [H]	BS MIX Ⓗ
A.DEF [S] [L]	AUDIO DEFEAT	BS MON [H]	BS MONITOR Ⓗ
A. DUB P [L]	AUDIO DUBBING PAUSE Ⓛ	BS MONI [H]	BS MONITOR Ⓗ
A. DUB [H]	AUDIO DUBBING Ⓗ	BS RCH IN	BS R CHANNEL INPUT
A. ERASE	AUDIO ERASE	BS VIDEO	BS VIDEO SIGNAL
A. H. SW	AUDIO HEAD SWITCHING PULSE	BS VIDEO/BS1	BS VIDEO SIGNAL
A. HEAD [R]	AUDIO HEAD (REC)	BS [H]	BS Ⓗ
A. HEAD [W]	AUDIO HEAD (PLAY)	BS. LEVEL	BS LEVEL
A. IN [L]	AUDIO INPUT (L)	BS. M [H]	BS MONITOR Ⓗ
A. IN [R]	AUDIO INPUT (R)	BS/VTR [H]	BS/VTR Ⓗ
A. MUT [H]	AUDIO MUTE Ⓗ	BUS CLK	BUS CLOCK
A. MUTE [H]	AUDIO MUTE Ⓗ	BUS LSN	BUS LISTEN
A. OUT [L]	AUDIO OUTPUT (L)	BUS TLK	BUS TALK
A. OUT [R]	AUDIO OUTPUT (R)	BUZZER	BUZZER
A. RF OUT	AUDIO RF SIGNAL OUTPUT	CAP EC	CAPSTAN TORQUE CONTROL
A/VS/S. DATA	AV SW/SERIAL DATA	CAP M GND	CAPSTAN MOTOR GND
AC ONLINE	AC ONLINE	CAP. ET	CAPSTAN TORQUE CONTROL
AC. O/EE. H	AC ONLINE/EE Ⓗ	CAP. FG1	CAPSTAN FG1 PULSE
AFC S C	AFC S CURVE	CAP. FG2	CAPSTAN FG2 PULSE
AFC [S]	AFC S CURVE	CAS. SW	CASSETTE SW
AFC. DEF	AFC DEFEAT	CCN	PLAYBACK CONTROL SIGNAL (−)
ARFC OUT	AUDIO RF SIGNAL OUTPUT	CCP	PLAYBACK CONTROL SIGNAL (+)
ART. V	ARTIFICIAL VERTICAL SYNC SIGNAL	CHM	CONTROL SIGNAL (+)
ART. V. MM	ARTIFICIAL VERTICAL SYNC	CHP	CONTROL SIGNAL (−)
	SIGNAL MONO MULTI	CINEM [L]	CINEMA Ⓛ
ART. V/H/N	ARTIFICIAL VERTICAL SYNC	CINEMA [L]	CINEMA Ⓛ
	SIGNALⒽ / NORMAL	CINEMA/MIX	CINEMA/MIX
AT. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL	CKL	RATCH LOCK
ATSW/TEST/NOR/SE	TEST/NORMAL/SERVICE	CKS	SHIFT LOCK
AUDIO IN [L]	AUDIO INPUT (L)	CL	CLOCK
AUDIO IN [R]	AUDIO INPUT (R)	CLK	CLOCK
AUDIO OUT [L]	AUDIO OUTPUT (L)	CLK (C.G)	CLOCK
AUDIO OUT [R]	AUDIO OUTPUT (R)	CLOCK. IN	CLOCK INPUT
AUDIO SELECT [H]	AUDIO SELECT Ⓗ	CLP	CLAMP
AUDIO. L	AUDIO (L)	COL/B/W/NOR	COLOUR/BLACK & WHITE/NORMAL
AUDIO. R	AUDIO (R)	COLOR [H]	COLOUR Ⓗ
AV CNT	AV CONTROL	CONV	CONVERTOR
AV CTL	AV CONTROL	CS	CHIP SELECT
AV CTL/S. CLK	AV CONTROL/SERIAL CLOCK	CTL GND	CONTROL GND
AV. C.M.	AV CONTROL MODE	CTL HEAD [+]	CONTROL HEAD (+)
AVCNT/METER. R	AV CONTROL/LEVEL METER(R)	CTL HEAD [−]	CONTROL HEAD (−)
AVSW/METER. L	AV SW/LEVEL METER (L)	CTL[+]	CONTROL HEAD (+)
B MODE. H	B MODE Ⓗ	CTL[−]	CONTROL HEAD (−)
B.G.P	BURST GATE PULSE	CUE BIAS	CUE BIAS
BACKUP 5V	BACK UP 5V	CURRENT LIM	CURRENT LIMITER
BAND. U.E.	BAND U	CYL ET	CYLINDER TORQUE CONTROL
BANDVL. D	BAND VL	CYL GND	CYLINDER GND
BI/MI [L]	BILINGUAL/MIX Ⓛ	D.F.M. REC [H]	DELAYED FM RECORDING Ⓗ
BIL	BILINGUAL	D. FM REC [L]	DELAYED FM RECORDING Ⓛ
BIL [L]	BILINGUAL Ⓛ	D. GND	DIGITAL GND

D. REC [H]	DELAYED RECORDING Ⓗ	H.SYNC	HORIZONTAL SYNC
D4/S. LED	D4/STILL LED	H. AMP. SW	HEAD AMP SW PULSE
D4/STILLED	D4/STILL LED	H. P <R>	HEAD PHONE (R)
DAC [CLK]	TUNER DAC (CLOCK)	H. P <L>	HEAD PHONE (L)
DAC/FSCS	TUNER DAC/FS CHIP SELECT	H. P GND	HEAD PHONE GND
DAREC [H]	DELAYED AUDIO RECORDINGⒽ	H. P OUT [L]	HEAD PHONE OUTPUT (L)
DATA	DATA	H. P OUT [R]	HEAD PHONE OUTPUT (R)
DECODER [L]	DECODER (L)	H. SW	HEAD SW PULSE
DECODER [R]	DECODER (R)	HEAD PHONE [L]	HEAD PHONE (L)
DEW	DEW	HEAD PHONE [R]	HEAD PHONE (R)
DEW SNS	DEW SENSOR	HEAD SW	HEAD SW
DFMRE [H]	DELAYED FM AUDIO RECORDINGⒽ	HEATER [+]	HEATER (+)
E. REC 5V	EXCEPT RECORDING 5V	HEATER [−]	HEATER (−)
EC	ERROR TORQUE CONTROL	HSS	HORIZONTAL SYNC SIGNAL
ECR	ERROR TORQUE CONTROL	HTR [+]	HEATER (+)
	REFERENCE VOLTAGE	HTR [−]	HEATER (−)
EDT TRIG [L]	EDIT TRIGGERⓁ	I RFE	REFERENCE CURRENT
EDIT [H]	EDIT Ⓗ	ICL	CONTROL AGC CIRCUIT
EE [H]	EE Ⓗ	IF	INTERMEDIATE FREQUENCY
EE [H]/INS [M]	EE Ⓗ /INSERTⓂ	IN SELA 1	INPUT SELECT A1 POSITION
EE. VV. TR	EE/VV/TRICK PLAY	IN SELA 2	INPUT SELECT A2 POSITION
EJECT. PO	EJECT POSITION	IN SELA 3	INPUT SELECT A3 POSITION
EJECT/VDET	EJECT/REVERSE SLOW LOCK	INS L/R [L]	INSERT Lch/RchⓁ
ENV. SEL	ENVELOPE SELECT	INS. [H]	INSERTⒽ
ENVE. OUT	ENVELOPE OUTPUT	INSEL A1	INPUT SELECT A1 POSITION
ENVE. SEL	ENVELOPE SELECT	INSEL A2	INPUT SELECT A2 POSITION
ENV SELECT	ENVELOPE SELECT	INSERT	INSERT
EP [H]	LP Ⓗ	INSERT [H]	INSERTⒽ
EP/LP [H]	LP Ⓗ	IO CS	INPUT/OUTPUT CHIP SELECT
EP/ LP/SP	LP/SP	JOG1	JOG1
EP/SS [H]	LP/SLOW/STILL/STOPⒽ	JOG S3 LED/FOWRD	JOG LED/FORWARD LED
EPROMCS	EPROM CHIP SELECT	JOG/F. LED	JOG LED/FORWARD LED
EX. REC 5V	EXCEPT RECORDING 5V	JSB [H]	JSB Ⓗ
FF/REW [L]	FAST FORWARD/REWINDⓁ	JST. CLCK	JUST CLOCK
FG1 IN	FG1 PULSE INPUT	JST. CLK	JUST CLOCK
FG2 IN	FG2 PULSE INPUT	JST. CLOCK	JUST CLOCK
FILTER ADJ.	FILTER ADJUSTMENT	L OUT	Lch OUTPUT
FLY ERASE [H]	FLYING ERASE HEAD ONⒽ	L. CH [H]	Lch Ⓗ
FLY ON [H]	FLYING ERASE HEAD ONⒽ	L. CH [L]	Lch Ⓛ
FLY. E [H]	FLYING ERASE HEAD ONⒽ	LED (MAIN)	LED (MAIN)
FM MUT [H]	FM AUDIO MUTEⒽ	LED (STEREO)	LED (STEREO)
FM MUTE [H]	FM AUDIO MUTEⒽ	LED (SUB)	LED (SUB)
FM OUT [L]	FM OUTPUT (L)	LED CKL	LED SERIAL CLOCK
FM OUT [R]	FM OUTPUT (R)	LED CKS	LED SERIAL CLOCK
FM PACK OUT [L]	FM PACK OUTPUT (L)	LED DATA	LED SERIAL DATA
FM PACK OUT [R]	FM PACK OUTPUT (R)	LINE IN 1 [L]	LINE INPUT 1 (L)
FM/BS SEL [L]	FM/BS SELECT (L)	LINE IN 1 [R]	LINE INPUT 1 (R)
FM/BS SEL [R]	FM/BS SELECT (R)	LINE IN 2 [L]	LINE INPUT 2 (L)
FS. CLK	FS CLOCK	LINE IN 2 [R]	LINE INPUT 2 (R)
FUL. E [H]	FULL ERASE HEAD ONⒽ	LINE IN V	LINE INPUT VIDEO
FULL. E [H]	FULL ERASE HEAD ONⒽ	LINE IN [L]	LINE INPUT (L)
FULL. E. 12V	FULL ERASE 12V	LINE IN [R]	LINE INPUT (R)
GND [A]	GND (ANALOGUE)	LINE OUT [L]	LINE OUTPUT (L)
GND [TU]	GND (TUNER)	LINE OUT [R]	LINE OUTPUT (R)
GND/N. SW. 12V	GND/NON SW 12V	LP [H]	LP Ⓗ

LPTRI [L]	LP TRICK PLAY Ⓛ	P. OFF [L]	POWER OFF Ⓛ
Lch/A. DUB	Lch/AUDIO DUBBING	PAL [H]	PAL Ⓗ
M GND	MOTOR GND	PAL [L]/NTSC [H]	PALⓁ /NTSCⒽ
M REG	MOTOR REGULATOR	PB ADJ. OUT	PLAYBACK ADJUST OUTPUT
MAIN OUT	MAIN OUTPUT	PB OUT	PLAYBACK OUTPUT
MAIN [L]	MAIN Ⓛ	PB. H	PLAYBACK Ⓗ
MAIN/MONO	MAIN/MONAURAL	PFG	PG/FG
MAX IN	MAXIMUM INPUT	PHOTSN +B	PHOTO SENSOR +B
MES [H]	MESECAM Ⓗ	PICT. CNT	PICTURE CONTROL
MESE [H]	MESECAM Ⓗ	PLAY LED/RVS LED	PLAY LED/REVERSE LED
MESE [L]	MESECAM Ⓛ	PLAY. PO	PLAY POSITION
METER 5V	LEVEL METER 5V	PLAY/R.LED	PLAY LED/REVERSE LED
METER [L]	LEVEL METER (L)	PLY/DEW	PLAY/DEW Ⓗ
METER [R]	LEVEL METER (R)	POWER OFF [L]	POWER OFF Ⓛ
METER. L/AVS	LEVEL METER (L)	PREROLL [H]	PREROLL Ⓗ
METER. R/AVC	LEVEL METER (R)	PWRFAIL	POWER FAILURE DETECT
MI/BI [L]	MIX Ⓗ /BILINGUAL	R. CH [H]	Rch Ⓗ
MIC GND	MIC GND	R. CH [L]	Rch Ⓛ
MIC IN	MIC INPUT	R. ST	RESET
MIC IN [L]	MIC INPUT (L)	R/S/F	REVERSEⒽ /STOPⓂ /FORWARDⓁ
MIC IN [R]	MIC INPUT (R)	RCH [H]	RchⒽ
MIC [H]	MIC Ⓗ	REC 12V	RECORDING 12V
MIX [H]	MIX Ⓗ	REC CHROMA	RECORDING CHROMINANCE SIGNAL
MIX [H]/CINEMA [L]	MIX Ⓗ /CINEMA SOUND Ⓛ	REC H	RECORDING Ⓗ
MIX/ CINE	MIX Ⓗ /CINEMA SOUND Ⓛ	REC IN	RECORDING INPUT
MIX/CINEMA [L]	MIX Ⓗ /CINEMA SOUND Ⓛ	REC OUT [L]	RECORDING OUTPUT Ⓛ
MN. H/M. L	MONAURAL Ⓗ /MAINⓁ	REC START	RECORDING START
MN. H/MAI. L	MONAURAL Ⓗ /MAIN Ⓛ	REC VR [C]	RECORDING VOLUME (COMMON)
MN2/MES. L	MONAURAL 2/MESECAMⓁ	REC VR [L]	RECORDING VOLUME (L)
MODE SEL	AUDIO MODE SELECT	REC VR [R]	RECORDING VOLUME (R)
MODE SW	AUDIO MODE SW	REC Y	RECORDING LUMINANCE SIGNAL
MODE. S. IN	AUDIO MODE SELECT INPUT	REC [H]	RECORDING Ⓗ
MODE. S. OUT	AUDIO MODE SELECT OUTPUT	REC. C	RECORDING CHROMINANCE SIGNAL
MONO [H]	MONAURAL Ⓗ	REC. Y	RECORDING LUMINANCE SIGNAL
MONO [H]/MAIN [L]	MONAURAL Ⓗ /MAIN Ⓛ	REC/EE CTL	RECORDING/EE CONTROL
MONO2 [L]	MONAURAL 2 Ⓛ	REEL-T	REEL PULSE(TAKE-UP)
MONO2/MESE[FM(L)]	MONAURAL 2/MESECAM(FMⓁ)	REEL-S	REEL PULSE (SUPPLY)
MOTOR GND	MOTOR GND	REGULATOR FILTER	REGULATOR FILTER
MUTE	MUTE	RESET	RESET
N. A. REC [L]	NORMAL AUDIO RECORDINGⓁ	REV M F/R	REVIEW MOTOR FORWARD/REVERSE
N. SW 12V	NON SW 12V		
N. SW. 5. DET	NON SW 5V DETECT	REV M V1	REVIEW MOTOR V1
NICAM	NICAM	REV M V2	REVIEW MOTOR V2
NICAM [L]	NICAM Ⓛ	REV MOTOR F/R	REVIEW MOTOR FORWARD/REVERSE
NOL [H]	PAL Ⓗ /4.43 NTSCⓂ /3.58 NTSCⓁ		
NOR/SOFT [H]	NORMAL/SOFT TAPE PLAY Ⓗ	REV MOTOR V1	REVIEW MOTOR V1
NORMAL [H]	NORMAL Ⓗ	REV MOTOR V2	REVIEW MOTOR V2
NR BIAS	NR BIAS	REV MOTOR [+]	REVIEW MOTOR (+)
NTSC [L]	NTSC Ⓛ	REV MOTOR [−]	REVIEW MOTOR (−)
OCH	CONTROL AGC CIRCUIT	REV. M. GND	REVIEW MOTOR GND
OUT	OUTPUT	RF.CHROMA	RF CHROMINANCE SIGNAL
P-OFF [H]	POWER OFF Ⓗ	RF OUT	RF OUTPUT
P-OFF [L]	POWER OFF Ⓛ	RF Y	RF LUMINANCE SIGNAL
P. FAIL	POWER FAILURE DETECT	RF. Y. IN	RF LUMINANCE SIGNAL INPUT
P. OFF [H]	POWER OFF Ⓗ	RF. Y. OUT	RF LUMINANCE SIGNAL OUTPUT

ROTAR. SW	ROTARY SW	T. BUSCLK	TIMER BUS CLOCK
ROTARY	ROTARY SW	T. BUSLSN	TIMER BUS LISTEN
RST	RESET	T. BUSTLK	TIMER BUS TALK
RST [L]	RESET Ⓛ	T. END [L]	TAPE END Ⓛ
Rch/INST	Rch/INSERT	T. PHOTO	TAKE-UP PHOTO TRANSISTOR
S IN	SERIAL DATA INPUT	TAPE END [L]	TAPE END Ⓛ
S OUT	SERIAL DATA OUTPUT	TAPE END [L]/CAM	TAPE END Ⓛ /CAMERA PAUSE
S-PHOTO	SUPPLY PHOTO TRANSISTOR	TEST	TEST MODE
S-RL. PLS	SUPPLY REEL PULSE	TPZ	TRAPEZOIDAL WAVE CIRCUIT
S. CLK	SERIAL CLOCK	TRIC [L]	TRICK PLAY Ⓛ
S. CLK/AV	SERIAL CLOCK/AV	TRICK [L]	TRICK PLAY Ⓛ
S. DATA	SERIAL DATA	TRK. ENV	AUDIO TRACKING ENVEL OPE DETECT
S. DATA/A	SERIAL DATA / AUDIO	TU. AUDIO	TUNER AUDIO
S. PHOTO	SUPPLY PHOTO TRANSISTOR	TU. GND	TUNER GND
S.TAB [L]	SAFETY TAB SW ON Ⓛ	TU. V. IN	TUNER VIDEO SIGNAL INPUT
S/P/N	SECAM/PAL/NTSC	TU. VIDEO	TUNER VIDEO
SC IN	SERIAL CLOCK INPUT	TUN NOR IN	TUNER NORMAL INPUT
SC OUT	SERIAL CLOCK OUTPUT	TUN R	TUNER AUDIO (R)
SCK SELECT	SERIAL CLOCK SELECT	TUN. AUDIO IN	TUNER AUDIO INPUT
SEL OUT [L]	SELECT OUTPUT (L)	TUNER 12V	TUNER 12V
SEL OUT [R]	SELECT OUTPUT (R)	TUNER L	TUNER AUDIO (L)
SHUTTLE 1	SHUTTLE 1	TUNER V IN	TUNER VIDEO SIGNAL INPUT
SIF	SOUND INTERMEDIATE FREQUENCY	TUNER [L]	TUNER AUDIO (L)
SLMUT [H]	INPUT SELECT MUTE Ⓗ	TUNER [N]	TUNER AUDIO (NORMAL)
SLNID [+]	SOLENOID (+)	TUNER [R]	TUNER AUDIO (R)
SLNID [−]	SOLENOID (−)	TUNER. 12	TUNER 12V
SLW TR. MM	SLOW TRACKING MONO MULTI	TUOFF [H]	TUNER OFF Ⓗ
SLW TR. REF	SLOW TRACKING REFERENCE VOLTAGE	TV. AUDIO	TV AUDIO
		TV/VTR	TV/VTR
SNS. GND	SENSOR GND	TXTON [L]	TEXT ON Ⓛ
SOFT [H]	SOFT TAPE PLAY Ⓗ	U. REG45V	UNREGULATOR 45V
SOFT [H]/NORMAL	SOFT TAPE PLAY Ⓗ /NORMAL Ⓗ	UNREG	UNREGULATOR
SOLENOID ON [L]	SOLENOID ON Ⓛ	UNREG 19V	UNREGULATOR 19V
SP [H]	SP Ⓗ	V. REF	REFERENCE VOLTAGE
SP/L/SLP	SP/LP	V. EE [H]	VIDEO EE Ⓗ
SSS [L]	SLOW/STILL/STOP Ⓛ	V. EE [L]	VIDEO EE Ⓛ
STEREO LED	STEREO LED	VCO REF	REFERENCE OSCILLATOR
STEREO [H]	STEREO Ⓗ	VD. IN	VIDEO SIGNAL INPUT
STEREO [L]	STEREO Ⓛ	VD. OUT	VIDEO SIGNAL OUTPUT
STOP. PO	STOP POSITION	VIDEO EE [L]	VIDEO EE Ⓛ
STOP/5V	STOP POSITION/5V	VIDEO IN	VIDEO SIGNAL INPUT
STOP1/TAPE SEL	STOP1 POSITION/TAPE SELECT	VIDEO OUT	VIDEO SIGNAL OUTPUT
STOP1/PAL : ST	STOP 1 POSITION/PAL	VM	MOTOR VOLTAGE
STOP2. PO	STOP 2 POSITION	VM DOWN [L]	MOTOR VOLTAGE DOWN Ⓛ
STOP2 / S-TAB	STOP POSITION/SAFETY TAB SW	VSS	VERTICAL SYNC SIGNAL
STREO [H]	STEREO Ⓗ	VTR [H]	VTR Ⓗ
SUB BIAS	SUB BIAS	VTR. 12V	VTR 12V
SUB. SW	SUB SW	X IN	OSCILLATOR INPUT
SVHS CAS [L]	S-VHS CASSETTE Ⓛ	X OUT	OSCILLATOR OUTPUT
SW. 5. DET	SW 5V DETECT		
SYNC [L]	SYNC Ⓛ		
SYSCON 5V	SYSTEM CONTROL 5V		
SYSTEM	SYSTEM SW		
T-PHOTO	TAKE-UP PHOTO TRANSISTOR		
T-RL. PLS	TAKE-UP REEL PULSE		

Input/Output Chart for IC6001

<table>
<tr><th>Pin Number</th><th>Input/Output</th><th>Port Name</th><th>Function</th></tr>
<tr><td>1</td><td>I</td><td>SAFETY TAB</td><td>When inserting the cassette tape with safety tab, this port is low.
When there is no safety tab, this port is high to prevent recording.</td></tr>
<tr><td>2</td><td>I</td><td>POSITION SW 3</td><td rowspan="3">
<table>
<tr><th>P.SW 3</th><th>P.SW 2</th><th>P.SW 1</th><th>Position (Mode) Name</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>EJECT</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>CASSETTE DOWN</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>REV,REV SLOW</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>MID (LOADING / UNLOADING)</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>PLAY/REC, STILL/PAUSE, CUE,
FWD SLOW STOP3 *1</td></tr>
<tr><td>1</td><td>0</td><td>1</td><td>STOP</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>FF/REW</td></tr>
<tr><td>1</td><td>1</td><td>1</td><td>INTERMEDIATE</td></tr>
</table>
(*1) The Pinch Roller is on the capstan motor shaft.</td></tr>
<tr><td>3</td><td>I</td><td>POSITION SW 2</td></tr>
<tr><td>4</td><td>I</td><td>POSITION SW 1</td></tr>
<tr><td>5</td><td>I</td><td>SUPPLY REEL PULSE</td><td>Supply Reel Pulse Input. (For detecting tape remaining.)</td></tr>
<tr><td>6</td><td>I</td><td>NORMAL/ SERVICE/TEST</td><td>Service Mode Setting
Normal Mode : High
Service Mode: Middle
Test Mode : Low</td></tr>
<tr><td>7</td><td>I</td><td>DEW</td><td>Not used (Low setting)</td></tr>
<tr><td>8</td><td>I</td><td>TEST</td><td>Not used (Low setting)</td></tr>
<tr><td>9</td><td>I</td><td>ENVELOPE SELECT</td><td>The playback envelope video signal level is detected at this input to select the video head in the special playback modes.</td></tr>
<tr><td>10</td><td>O</td><td>ROTARY SW</td><td>This signal is supplied to the chrominance circuit to perform the phase rotation.</td></tr>
<tr><td>12</td><td>O</td><td>HEAD AMP SWITCH</td><td>This signal is supplied to the head amp circuit to switch the video head,SP or LP.</td></tr>
<tr><td>14</td><td>O</td><td>ARTIFICIAL V/H/N</td><td>Artificial Vertical Sync Signal is supplied to video circuit to stabilize the picture in the special playback modes.</td></tr>
<tr><td>17</td><td>I</td><td>TAKE-UP PHOTO</td><td>Take-up Side Photo Sensor Input. (For detecting tape beginning.)</td></tr>
<tr><td>18</td><td>I</td><td>SUPPLY PHOTO</td><td>Supply Side Photo Sensor Input. (For detecting tape end.)</td></tr>
<tr><td>19</td><td>I</td><td>TAKE-UP REEL</td><td>Take-up Reel Pulse Input.
(For detecting tape remaining and reel (Cap.) lock.)</td></tr>
<tr><td>20</td><td>O</td><td>SP/LP</td><td>Not used</td></tr>
<tr><td>45</td><td>O</td><td>AUDIO H.SW</td><td>Not used</td></tr>
</table>

Fig. A1-1

Pin Number	Input/Output	Port Name	Function
46	O	SERIAL CLOCK SELECT	Refer to Fig. A2 and A3.
47	O	SYSTEM SEL	Refer to Fig. A3.
48	O	L CH/R CH	Not used (L CH Low setting)
49	O	BIL/STEREO	Not used
50	O	MESECAM (H)	Refer to Fig. A4.
51	O	NTSC/PAL	Refer to Fig. A2.
52	I	TV/VTR	Refer to Fig. A2.
53	O	MONO 1/2	Not used
54	O	SENSOR LED ON (L)	When turning on the Sensor LED, this port is low. 1) STOP Mode : No lit. 2) FF, REW, CUE, REV Modes : DC is lit. 3) EJECT Mode : Pulse blinking. (Cycle : 320[m sec.])
55	O	VOLTAGE CHANGE (H)	When increasing the drive torque of loading motor to perform the FF/REW mode, this port is high.
56	O	CANAL	Refer to Fig. A4.
57	O	NTSC M (H)	Refer to Fig. A4.
58	O	UNLOADING (H)	When unloading, this port is high.
59	O	LOADING (H)	When loading, this port is high.
60	O	HEAD SW	This signal is supplied to the Head Amp circuit to switch the video head, R or L.
61	O	CURRENT LIMIT	Capstan torque limitter Output.
62	O	CAP R/S/F	Capstan Rotation Direction Output. Reverse : High Stop : Middle Forward : Low
63	O	SERIAL CLOCK	Serial Clock Output.
64	I/O	SERIAL DATA	Serial Data Input/Output.
65	O	SP (H)	Tape speed output. SP = High LP = Low
66	O	DELAYED REC (H)	When the VCR goes to the recording mode after a delay from the video recording command, this port is high.

Fig. A1-2

Pin Number	Input/Output	Port Name	Function
67	O	DELAYED AUDIO REC (H)	When the VCR goes to the recording mode after a delay from the audio recording command, this port is high.
68	O	PAL I (H)	When selecting the PAL-I system during tuner preset.
69	O	REC (H)	When the VCR goes to the recording mode, this port is high.
70	O	NTSC (L)	System output NTSC = Low PAL = High
71	O	AUDIO MUTE (H)	When the VCR goes to the audio mute mode, this port is high.
72	O	CAPSTAN REVERSE (H)	Not used
73	O	VTR (L)	VTR/TV switch output.
74	O	A. DUB (H)	Not used
75	O	CURRENT EMPHASIS (H)	When the VCR goes to the servo edit mode, this port is high.
76	O	FF/REW (L)	When the VCR goes to the FF/REW mode, this port is low.
77	O	FM MUTE (H)	Not used
78	O	VIDEO EE (L)	When the VCR goes to the EE mode, this port is low.
79	O	TRICK (L)	When the VCR goes to the special playback (CUE, REV,SLOW STILL) mode, this port is low.
80	O	POWER OFF (H)	Power ON/OFF Control is low, when the power switch is turned on.
82	I	OSC 1	Oscillator input.
83	O	OSC 2	Oscillator output.
84	I	RESET (L)	When resetting the IC6001, this port is low.

Fig. A1-3

		PIN 46 OUTPUT (SCAN OUT)	
		L	H
PIN 51 INPUT (SYSTEM/ DECK TYPE)	L	PAL SYSTEM	TV/VTR COMBINATION TYPE
	H	NTSC SYSTEM	TABLE TYPE
PIN 52 INPUT (TV/VTR)	L	COMPULSION TV	
	H	AUTO	

Fig. A2

	PIN 46 OUTPUT	MODE
	L H	
PIN 47 (SYSTEM SEL)	L L	MODE 1
	L H	MODE 2
	H L	MODE 3
	H H	MODE 4

Fig. A3

	MODE 1,4	MODE 2	MODE 3
PIN 50 (SYSTEM 1)	MESECAM Ⓗ OUT	MESECAM Ⓗ OUT	NTSC Ⓛ OUT
PIN 57 (SYSTEM 2)	NTSC-M Ⓗ OUT	SECAM Ⓗ OUT	——
PIN 56 (SYSTEM 3)	DBS Ⓛ OUT	DBS Ⓛ OUT	——
PIN 68 (SYSTEM 4)	PAL-I Ⓗ OUT	SECAM Ⓛ OUT	——

Fig. A4

CVC (Crystal View Control) Function

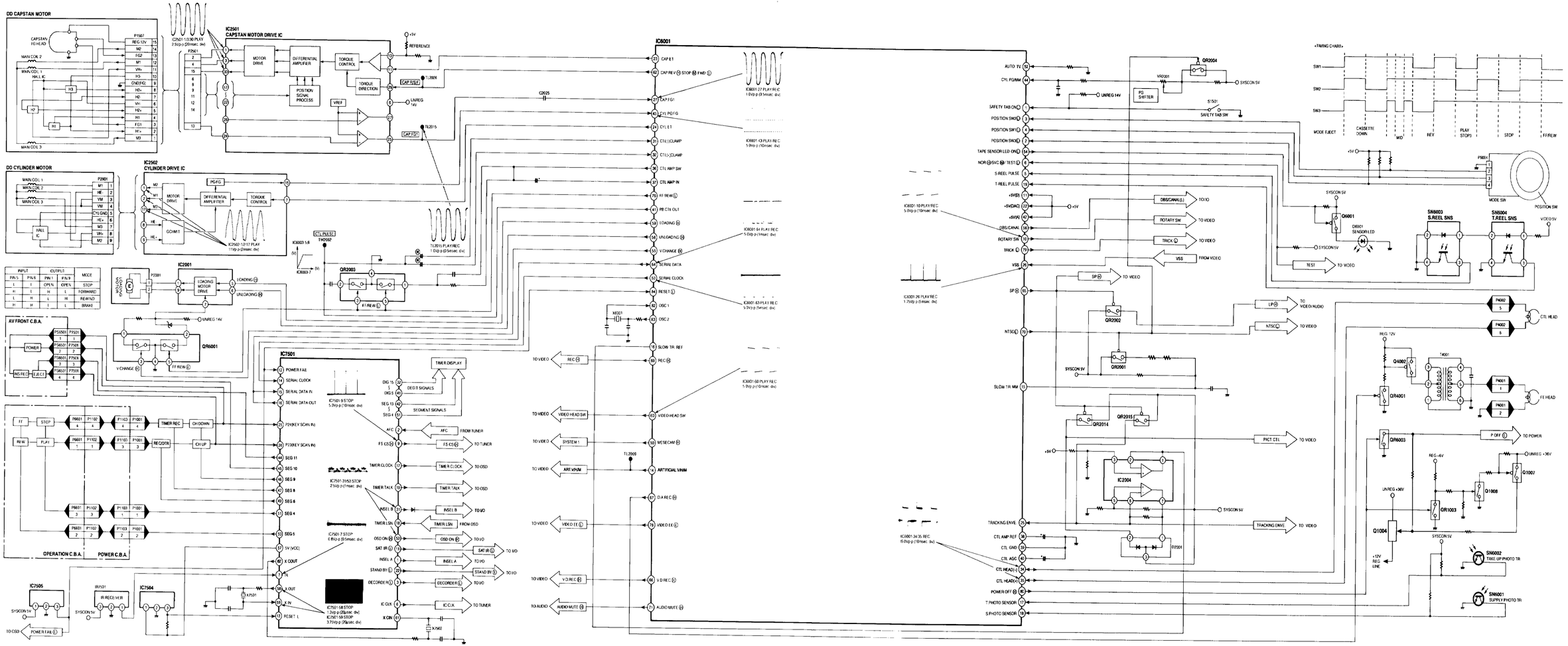
The playback are adjusted to achieve optimum picture quality from tapes with varying characteristics.

(1) Detail explanation
<Playback mode>
The picture quality is varying from the different tapes as follows:

1) If the output level is low, from worn or rental cassette tapes, a soft picture is obtained by the RF equalizer and picture control on the Video Pack C.B.A.
2) If the output level is medium, from normal tapes, a sharp picture is obtained from the emphasis and picture control on the Video Pack C.B.A.
3) If the output level is high, from HG/S tapes, a sharp and detailed picture is obtained from the RF equalizer, emphasis picture control and noise canceller on the Video Pack C.B.A.

MEMO

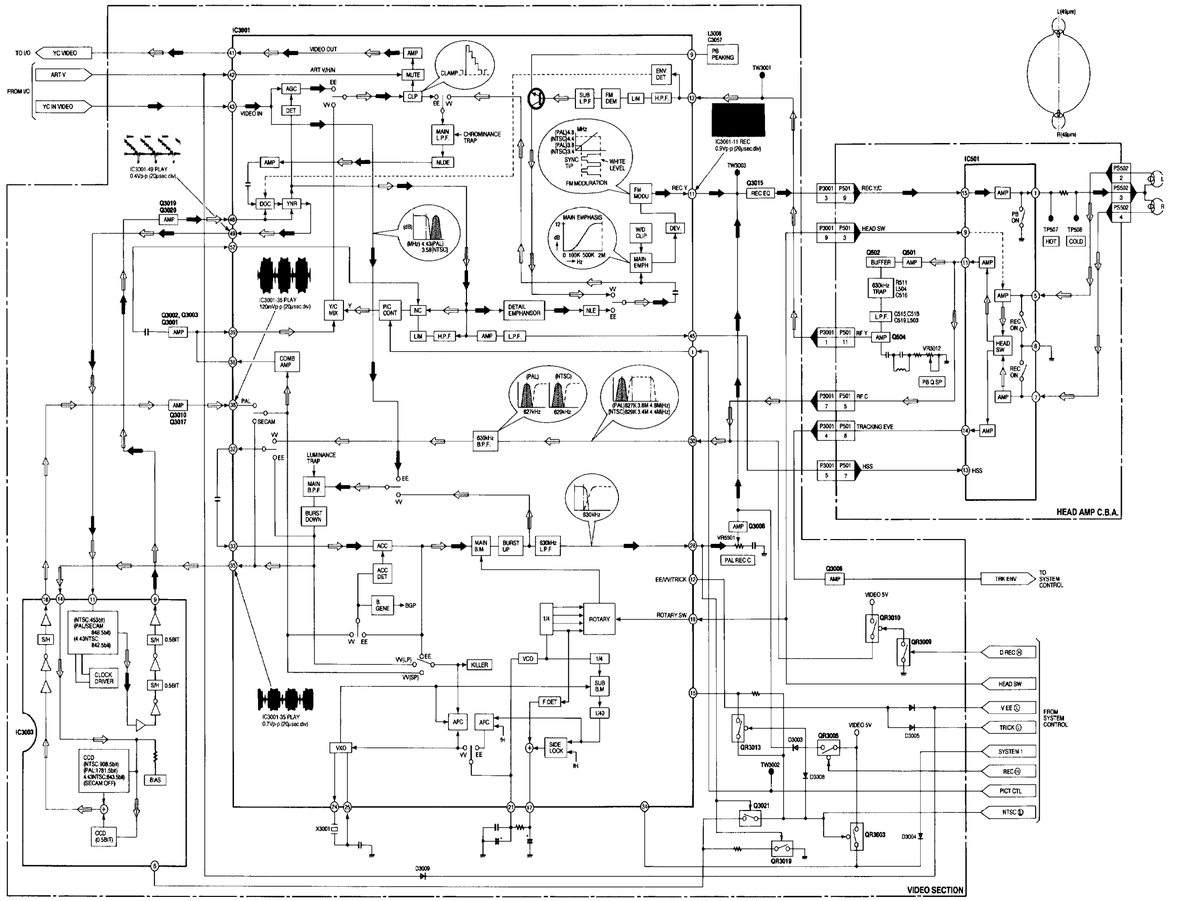
3-2. SYSTEM CONTROL & SERVO SECTION BLOCK DIAGRAM



3-3. VIDEO SECTION BLOCK DIAGRAM

VIDEO MAIN SIGNAL PATH IN REC MODE

VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE



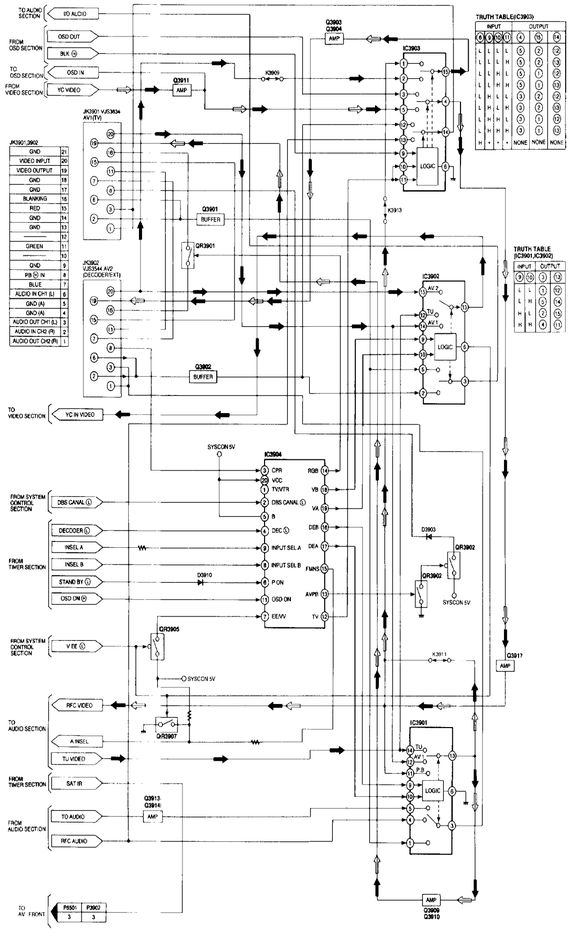
3–13

3–14

3-4. INPUT/OUTPUT SECTION BLOCK DIAGRAM

VIDEO MAIN SIGNAL PATH IN REC MODE

VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE



3–15

TRUTH TABLE

IC3904 INPUT CH SELECT		
DBS/CANAL (⑥)	INPUT SLCT B (⑤)	INPUT SLCT A (④)
H	H	H
L	H	L
H	L	L
L	L	H
H	H	L

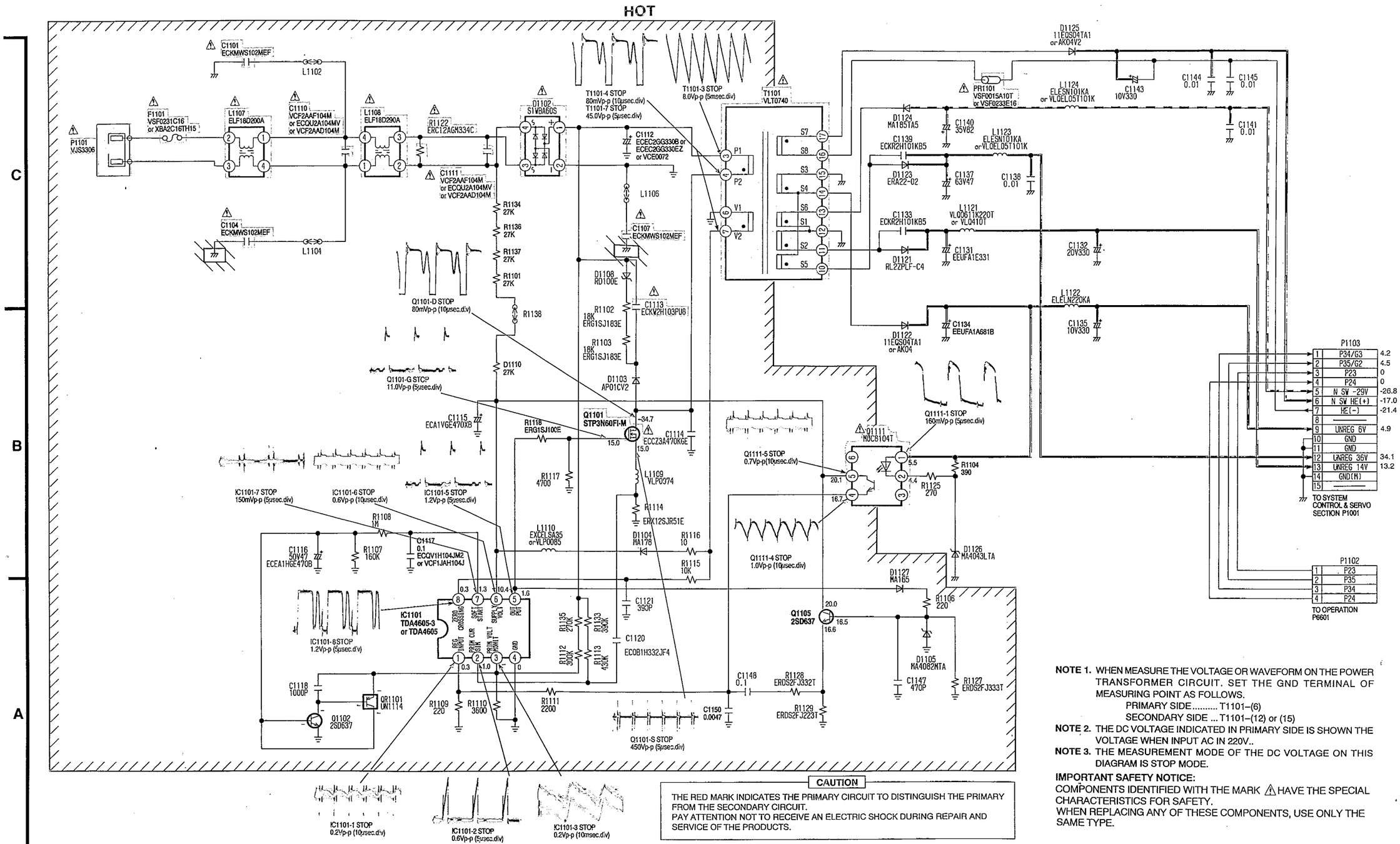
POWER (⑥)	AV2 SLCT (③)	EE/VV (②)	OSD ON (①)	INPUT CH	AV2 PB (③)	AV2 OUT SLCT (⑦)	VTR IN SLCT (⑧)	AV1 OUT SLCT (⑦)	AV1 PB (⑨)	RGB SW (⑤)	PM NS (⑧)	AV1 OUT (AV1) (⑧)	AV2 OUT (AV2) (⑧)	VTR OUT (IC3901 ⑪)	AUDIO OUT (IC3901 ⑫)	AUDIO OUT (IC3902 ⑫)	AUDIO OUT (IC3903 ⑬)
OFF ⑤	—	—	—	—	—	L	L	L	L	L	L	L	L	AV2 IN	AV1 IN	—	TUNER
ON ⑭	VTR ⑭	EE ⑭	OFF ⑮	H	H	H	H	H	H	H	H	H	H	TUNER	TUNER	—	TUNER
				L	L	L	L	L	L	L	L	L	L	AV1 IN	AV2 IN	—	AV1 AUDIO IN
				H	H	H	H	H	H	H	H	H	H	VTR OUT	TUNER OUT	—	AV1 AUDIO IN
				L	L	L	L	L	L	L	L	L	L	TUNER	AV1 IN	—	AV2 AUDIO IN
				H	H	H	H	H	H	H	H	H	H	AV1 IN	AV2 IN	—	AV2 AUDIO IN
			ON ⑭	L	L	L	L	L	L	L	L	L	L	AV2 IN	TUNER	—	TUNER
				H	H	H	H	H	H	H	H	H	H	TUNER	PLAYBACK	—	AV1 AUDIO IN
				L	L	L	L	L	L	L	L	L	L	PLAYBACK	AV1 IN	—	AV2 AUDIO IN
				H	H	H	H	H	H	H	H	H	H	AV1 IN	AV2 IN	—	PLAYBACK
				L	L	L	L	L	L	L	L	L	L	AV2 IN	PLAYBACK	—	PLAYBACK
		VV ⑬	—	H	H	H	H	H	H	H	H	H	H	PLAYBACK	TUNER	—	TUNER
			OFF ⑮	L	L	L	L	L	L	L	L	L	L	AV1 IN	AV1 IN	—	AV1 AUDIO IN
				H	H	H	H	H	H	H	H	H	H	VTR OUT	TUNER OUT	—	AV1 AUDIO IN
				L	L	L	L	L	L	L	L	L	L	TUNER	AV2 IN	—	AV2 AUDIO IN
				H	H	H	H	H	H	H	H	H	H	AV1 IN	AV2 IN	—	AV2 AUDIO IN
			ON ⑭	L	L	L	L	L	L	L	L	L	L	AV2 IN	TUNER	—	TUNER
				H	H	H	H	H	H	H	H	H	H	TUNER	PLAYBACK	—	AV1 AUDIO IN
				L	L	L	L	L	L	L	L	L	L	PLAYBACK	AV1 IN	—	AV2 AUDIO IN
				H	H	H	H	H	H	H	H	H	H	AV1 IN	AV2 IN	—	PLAYBACK
				L	L	L	L	L	L	L	L	L	L	AV2 IN	PLAYBACK	—	PLAYBACK
		EE ⑭	OFF ⑮	H	H	H	H	H	H	H	H	H	H	PLAYBACK	TUNER	—	TUNER
				L	L	L	L	L	L	L	L	L	L	AV1 IN	AV1 IN	—	AV1 AUDIO IN
				H	H	H	H	H	H	H	H	H	H	VTR OUT	TUNER OUT	—	AV1 AUDIO IN
				L	L	L	L	L	L	L	L	L	L	TUNER	AV2 IN	—	AV2 AUDIO IN
				H	H	H	H	H	H	H	H	H	H	AV1 IN	AV2 IN	—	AV2 AUDIO IN
			ON ⑭	L	L	L	L	L	L	L	L	L	L	AV2 IN	TUNER	—	TUNER
				H	H	H	H	H	H	H	H	H	H	TUNER	PLAYBACK	—	AV1 AUDIO IN
				L	L	L	L	L	L	L	L	L	L	PLAYBACK	AV1 IN	—	AV2 AUDIO IN
				H	H	H	H	H	H	H	H	H	H	AV1 IN	AV2 IN	—	PLAYBACK
				L	L	L	L	L	L	L	L	L	L	AV2 IN	PLAYBACK	—	PLAYBACK
		VV ⑬	—	H	H	H	H	H	H	H	H	H	H	PLAYBACK	TUNER	—	TUNER
			OFF ⑮	L	L	L	L	L	L	L	L	L	L	AV1 IN	AV1 IN	—	AV1 AUDIO IN
				H	H	H	H	H	H	H	H	H	H	VTR OUT	TUNER OUT	—	AV1 AUDIO IN
				L	L	L	L	L	L	L	L	L	L	TUNER	AV2 IN	—	AV2 AUDIO IN
				H	H	H	H	H	H	H	H	H	H	AV1 IN	AV2 IN	—	AV2 AUDIO IN
			ON ⑭	L	L	L	L	L	L	L	L	L	L	AV2 IN	TUNER	—	TUNER
				H	H	H	H	H	H	H	H	H	H	TUNER	PLAYBACK	—	AV1 AUDIO IN
				L	L	L	L	L	L	L	L	L	L	PLAYBACK	AV1 IN	—	AV2 AUDIO IN
				H	H	H	H	H	H	H	H	H	H	AV1 IN	AV2 IN	—	PLAYBACK
				L	L	L	L	L	L	L	L	L	L	AV2 IN	PLAYBACK	—	PLAYBACK

IC3904 INPUT CH SELECT		
DBS/CANAL (⑥)	INPUT SLCT B (⑤)	INPUT SLCT A (④)
H	H	H
L	H	L
H	L	L
L	L	H
H	H	L

INPUT CH	
NORMAL TUNER	AV1
DBS/C • TUNER	AV2

3–16

3-5. POWER SCHEMATIC DIAGRAM



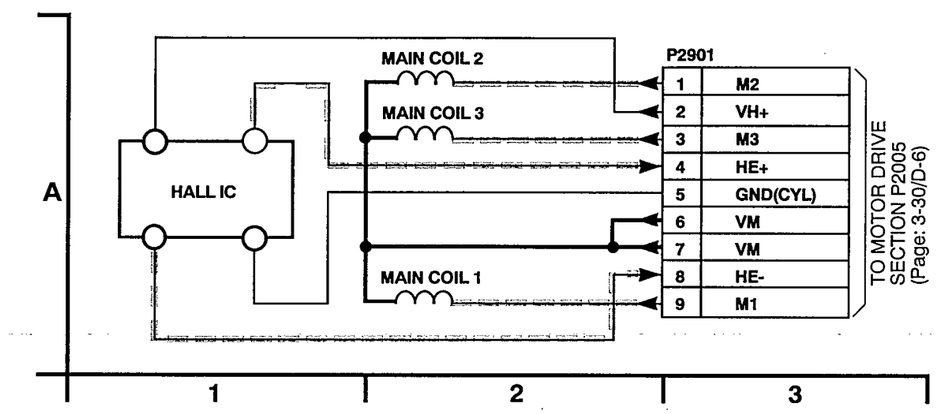
NOTE 1. WHEN MEASURE THE VOLTAGE OR WAVEFORM ON THE POWER TRANSFORMER CIRCUIT. SET THE GND TERMINAL OF MEASURING POINT AS FOLLOWS.
PRIMARY SIDE..... T1101–(6)
SECONDARY SIDE ... T1101–(12) or (15)

NOTE 2. THE DC VOLTAGE INDICATED IN PRIMARY SIDE IS SHOWN THE VOLTAGE WHEN INPUT AC IN 220V..

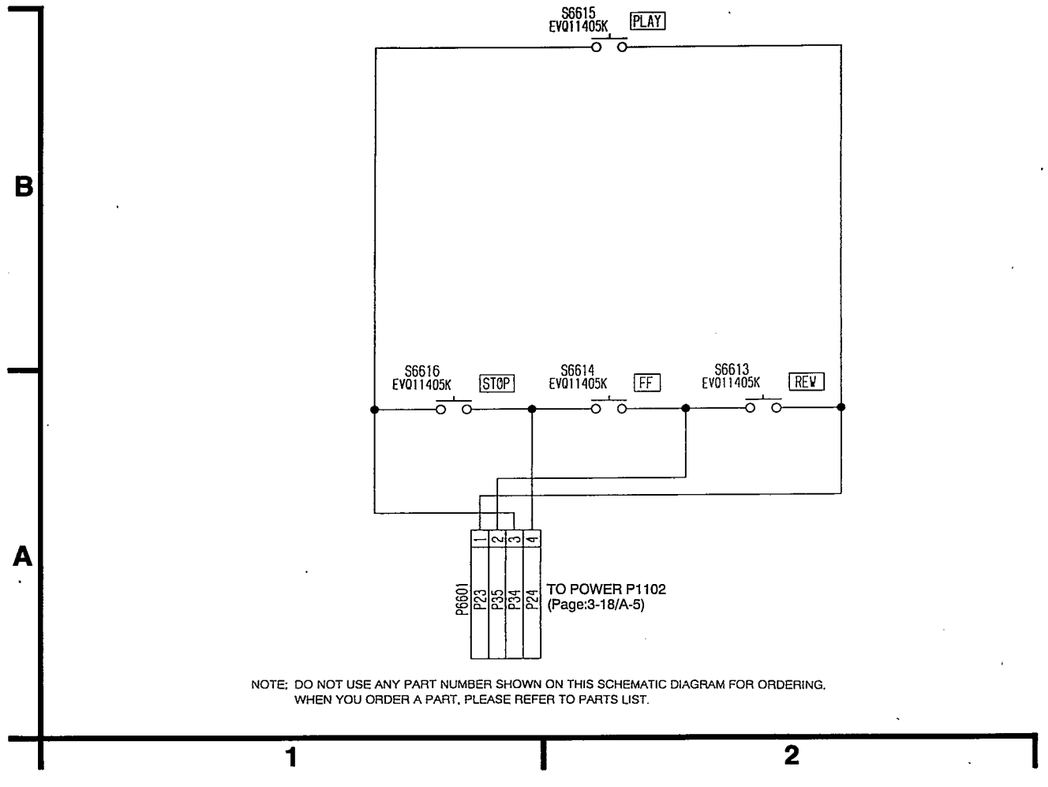
NOTE 3. THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

3-6. CYLINDER STATOR UNIT SCHEMATIC DIAGRAM



3-7. OPERATION SCHEMATIC DIAGRAM



NOTE; DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

SYSTEM CONTROL & SERVO ICs DC VOLTAGE CHART (SP MODE)

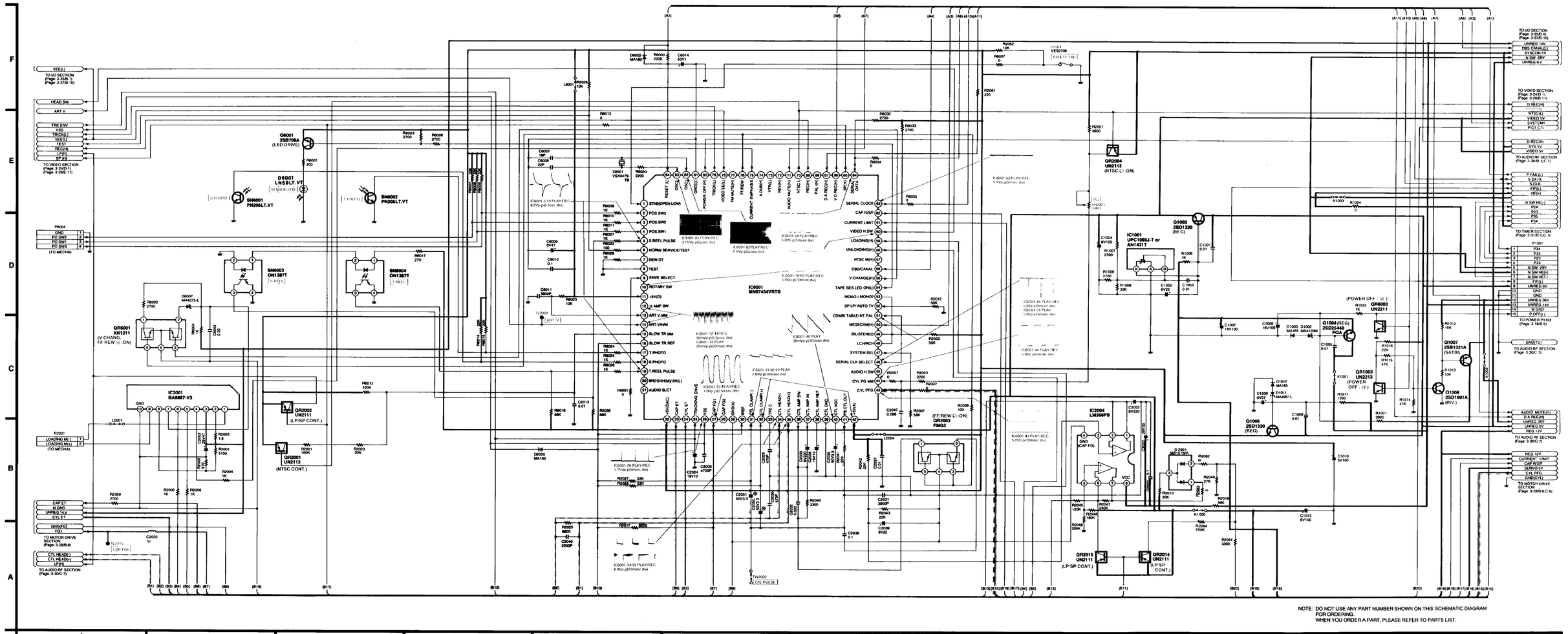
REF. NO.	IC1001										IC2001									
MODE	K	A	R								1	2	3	4	5	6	7	8	9	10
STOP	5.5	0	2.2								1.2	12.9	12.9	0	0	0	7.2	8.3	0.7	0
PLAY	5.5	0	2.2								-0.3	12.9	12.9	0	0	0	7.2	8.3	3.0	0
REC	5.5	0	2.2								1.2	12.9	12.9	0	0	0	7.2	8.3	0.7	0
F.F.	5.5	0	2.2								0.3	12.9	12.9	0	0	0	12.6	8.3	1.5	0
REW	5.5	0	2.2								1.6	12.9	12.9	0	0	0	12.6	8.3	1.5	0
REF. NO.	IC2004																			
MODE	1	2	3	4	5	6	7	8												
STOP	2.3	2.3	2.3	0	2.7	2.8	5.3	12.6												
PLAY	2.3	2.3	2.3	0	2.7	2.8	2.3	12.6												
REC	2.3	2.3	2.3	0	2.7	2.8	2.3	12.6												
F.F.	2.3	2.3	2.3	0	2.7	2.8	5.0	12.3												
REW	2.3	2.3	2.3	0	2.7	2.8	4.1	12.3												
REF. NO.	IC6001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0	4.8	0	0	0	4.8	0	0	0	4.7	4.8	0	0	0	0	2.4	4.8	4.7	4.7	0
PLAY	4.8	4.8	0	0	4.7	4.8	0	0	0	0	0	0	0	0	0	2.4	4.7	4.7	4.7	0
REC	0	4.8	0	0	4.7	4.8	0	0	0	4.7	4.7	0	0	0	0	2.4	4.7	4.7	4.7	0
F.F.	0	4.8	4.8	0	4.7	4.8	0	0	0	4.7	4.8	0	0	0	0	2.4	4.7	4.7	4.7	0
REW	0	4.8	4.8	0	4.7	4.8	0	0	0	4.7	4.8	0	0	0	0	2.4	4.7	4.7	4.7	0
REF. NO.	IC6001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	4.8	4.8	0	2.3	1.6	2.3	2.4	2.4	0	2.4	2.2	2.5	4.8	0	0	0	2.3	2.3	0	2.2
PLAY	4.8	4.8	2.4	2.2	3.0	2.3	2.4	2.3	0	2.4	2.5	2.4	4.7	0	–	–	–	2.3	0	2.5
REC	4.8	4.8	2.4	2.2	3.0	2.3	2.4	2.3	0	2.4	2.2	2.4	4.7	2.4	3.3	0	2.3	2.3	0	2.2
F.F.	4.8	4.8	2.1	2.2	1.6	2.3	2.4	2.3	0	2.4	2.2	2.4	4.7	0	0	0	2.3	2.3	0	2.6
REW	4.8	4.8	2.4	2.2	2.1	2.3	2.4	2.3	0	2.4	2.2	2.4	4.7	0	0	0	2.3	2.3	0	2.6
REF. NO.	IC6001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	2.4	4.8	1.3	3.5	0	4.6	0	4.7	4.7	0	4.6	4.7	4.7	4.8	4.7	4.7	0	0	0	4.7
PLAY	2.4	4.8	1.0	3.5	4.8	4.6	0	4.7	4.7	0	4.6	4.7	4.7	0	4.7	0	0	0	0	4.7
REC	2.4	4.8	1.3	3.5	0	4.6	0	4.7	4.7	0	4.6	4.7	4.7	0	4.7	4.7	0	0	0	4.7
F.F.	2.4	4.8	1.3	3.5	0	4.6	0	4.7	4.7	0	4.6	4.7	4.7	0	0	4.8	0	0	0	4.7
REW	2.4	4.8	1.3	3.5	0	4.6	0	4.7	4.7	0	4.6	4.7	4.7	0	0	4.8	0	0	0	4.7
REF. NO.	IC6001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
STOP	4.7	1.9	4.3	4.4	4.8	0	0	4.8	0	4.8	0	4.8	4.7	0	0	4.7	0	0	4.8	0
PLAY	4.7	0	4.3	4.4	4.8	0	0	4.8	0	4.8	0	0	0	0	0	4.7	0	4.8	4.8	0
REC	4.7	0	4.3	4.4	4.8	4.7	4.7	4.8	4.7	4.8	0	0	4.7	0	0	4.7	0	0	4.8	0
F.F.	4.7	0	4.3	4.4	4.8	0	0	4.8	0	4.8	0	0	4.7	0	0	0	0	0	4.8	0
REW	4.7	4.8	4.3	4.4	4.8	0	0	4.8	0	4.8	4.7	4.8	4.7	0	0	0	4.8	0	4.8	0
REF. NO.	IC6001																			
MODE	81	82	83	84																
STOP	0	–	–	4.6																
PLAY	0	–	–	4.6																
REC	0	–	–	4.6																
F.F.	0	–	–	4.6																
REW	0.3	–	–	4.6																

SYSTEM CONTROL & SERVO TRANSISTORs DC VOLTAGE CHART (SP MODE)

REF. NO.	Q1003			Q1004			Q1005			Q1007			Q1008			Q6001		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	4.7	4.8	5.5	12.2	12.9	12.8	4.9	5.3	5.6	33.8	33.8	33.1	0	0.1	0.5	4.8	-1.4	4.8
PLAY	4.7	4.8	5.5	12.2	12.9	12.8	4.9	5.3	5.6	33.8	33.8	33.1	0	0	0.5	4.8	4.7	4.0
REC	4.7	4.8	5.5	12.2	12.9	12.8	4.8	5.3	5.6	33.8	33.8	33.1	0	0	0.5	4.8	4.7	4.0
F.F.	4.7	4.8	5.5	12.2	12.9	12.8	4.9	5.3	5.6	33.4	33.4	32.7	0	0	0.5	4.8	4.7	4.0
REW	4.7	4.8	5.5	12.2	12.9	12.8	4.9	5.3	5.6	33.8	33.4	33.1	0	0	0.5	4.8	4.7	4.0
REF. NO.	QR1003			QR2002			QR2003						QR2014			QR2015		
MODE	E	C	B	E	C	B	1	2	3	4	5		E	C	B	E	C	B
STOP	0	3.4	0	4.9	0	5.0	0	0	4.7	0	4.7		5.0	2.3	4.9	5.0	2.8	4.9
PLAY	0	3.4	0	0.1	0	5.0	0	0	4.7	0	4.7		5.0	2.1	4.9	5.0	2.8	4.9
REC	0	3.4	0	4.9	0	5.0	0	0	4.7	0	4.7		5.0	2.3	4.9	5.0	2.8	4.9
F.F.	0	3.4	0	4.9	0	5.0	–	0.6	0	0	0		5.0	2.3	4.9	5.0	2.8	4.9
REW	0	3.4	0	4.9	0	5.0	–	0.6	0	0	0		5.0	2.3	4.9	5.0	2.8	4.9
REF. NO.	QR6001						QR6003			QR2001			QR2004					
MODE	1	2	3	4	5		E	C	B	E	C	B	E	C	B			
STOP	0	0	4.7	0	4.7		0	12.8	0	4.9	0	4.9	4.9	4.7	4.9			
PLAY	0	0	4.7	0	4.7		0	12.8	0	4.9	0	4.9	4.9	4.7	4.9			
REC	0	0	4.7	0	4.7		0	12.8	0	4.9	0	4.9	4.9	4.7	4.9			
F.F.	12.7	6.5	0	0	0		0	12.8	0	4.9	0	4.9	4.9	4.7	4.9			
REW	12.7	6.5	0	0	0		0	12.8	0	4.9	0	4.9	4.9	4.7	4.9			

3-8. SYSTEM CONTROL & SERVO SECTION IN MAIN SCHEMATIC DIAGRAM

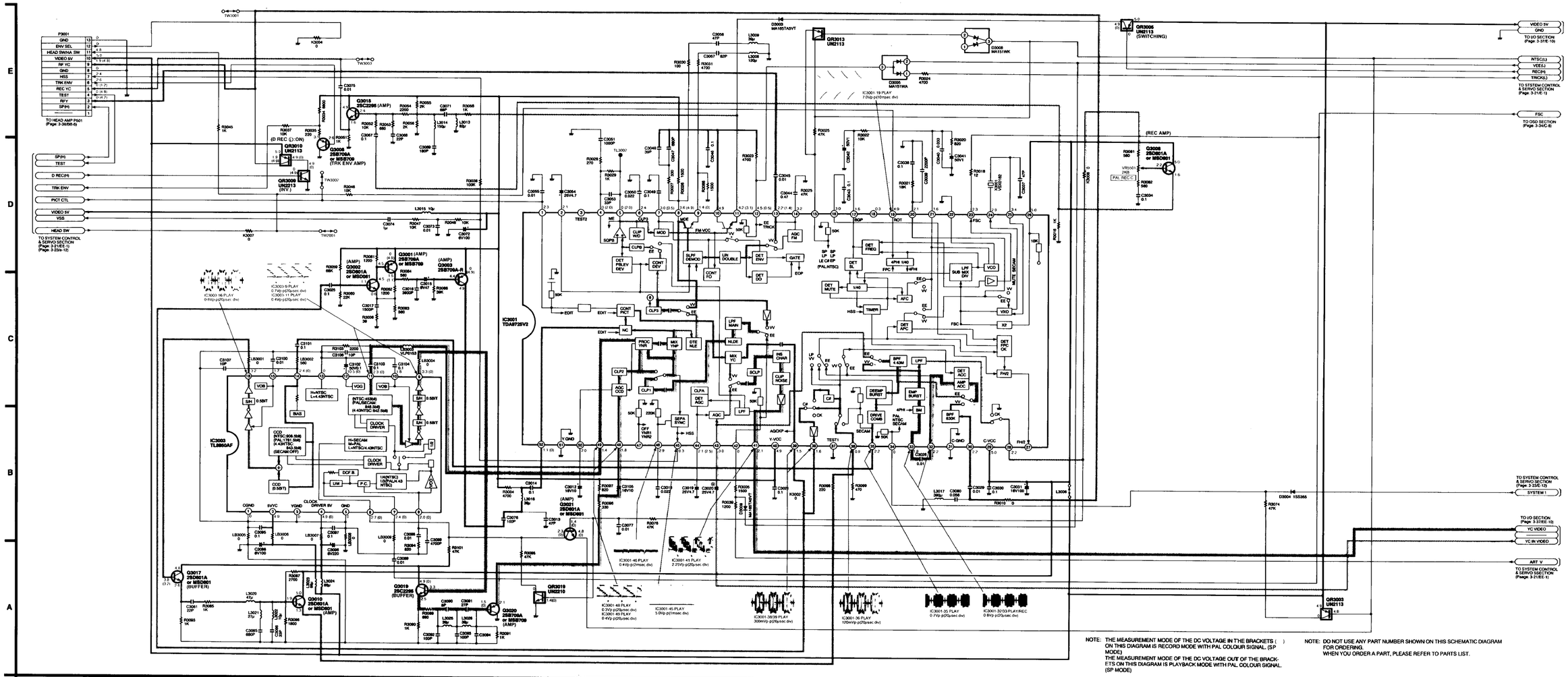
CAPSTAN SERVO PHASE LOOP — CYLINDER SERVO PHASE LOOP — CAPSTAN SERVO SPEED LOOP — CYLINDER SERVO SPEED LOOP


IC6001 MN674344VRTB
IC2001 BA6887-V3
IC1001 UPC1085A-T or AN1431T
IC2004 LM358PS
Q6001 2SB709A (LED DRIVE)
D6001 LN5917.VT (SENSOR LED)
SN6001 PN206LT.VT
SN6002 PN206LT.VT
SN6003 ON1387T
SN6004 ON1387T
QR6001 XN1211 (V CHANG. FF.REW (-) ON)
QR2002 UN2111 (L.P/SP CONT.)
QR2001 UN2113 (NTSC CONT.)
QR2004 UN2112 (NTSC (-) ON)
QR2015 UN2111 (L.P/SP CONT.)
QR2014 UN2111 (L.P/SP CONT.)
Q1003 2SD1330 (REG)
Q1004 (REG) 2SD2540 PQA
QR1003 UN2213 (POWER OFF : H)
QR6001 UN2211
Q1007 2SB1321A (SAT/B)
Q1008 2SD1991A (INV.)
Q1006 2SD1330 (REG)
TO I/O SECTION (Page 3-35/B-1) (Page 3-37/B-10)
TO VIDEO SECTION (Page 3-24/D-1) (Page 3-26/E-11)
TO AUDIO/RF SECTION (Page 3-30/B (,C-7)
TO TIMER SECTION (Page 3-51/B (,C-1)
TO POWER P1103 (Page 3-18/B-5)
TO AUDIO/RF SECTION (Page 3-30/C-7)
TO AUDIO/RF SECTION (Page 3-30/C-7)
TO MOTOR DRIVE SECTION (Page 3-28/B-8)
TO AUDIO RF SECTION (Page 3-30/C-7)
TO MOTOR DRIVE SECTION (Page 3-28/B-6,C-6)
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.
WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-9. VIDEO SECTION IN MAIN SCHEMATIC DIAGRAM

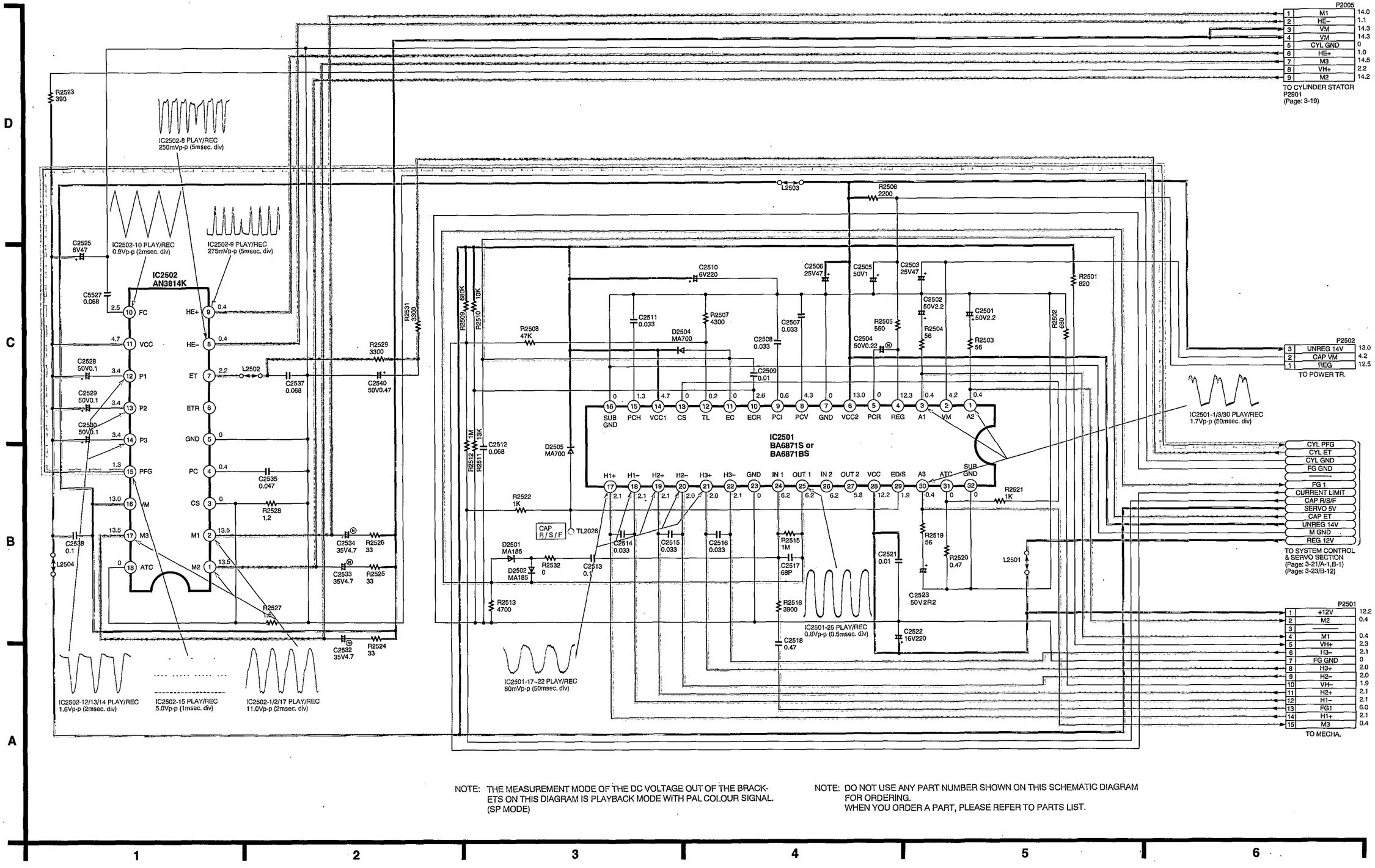
VIDEO MAIN SIGNAL PATH IN REC MODE

VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE


IC3001 TDA8725V2
IC3003 TL8860AF
Q3001 (AMP) 2SB709A or MSB709
Q3002 2SD601A or MSD601
Q3003 2SB709A-R
Q3015 2SC2296 (AMP)
Q3016 2SB709A or MSB709 (TRK ENV AMP)
Q3017 2SD601A or MSD601 (BUFFER)
Q3018 2SD601A or MSD601 (AMP)
Q3019 2SC2296 (BUFFER)
Q3020 2SB709A or MSB709 (AMP)
Q3021 2SD601A or MSD601
Q3088 2SD601A or MSD601
QR3010 UN2113
QR3011 UN2113 (INV.)
QR3013 UN2113
QR3019 UN2210
QR3005 UN2113 (SWITCHING)
QR3003 UN2113
D3002 MA165TA/SVT
D3006 MA151WK
D3005 MA151WA
D3004 1SS355
D3000 MA165TA/SVT
TO HEAD AMP P501 (Page 3-36/B8-9)
TO SYSTEM CONTROL & SERVO SECTION (Page 3-21/EE-1) (Page 3-23/a-12)
TO I/O SECTION (Page 3-37/E-10)
TO SYSTEM CONTROL & SERVO SECTION (Page 3-21/E-1)
TO OSD SECTION (Page 3-34/C-8)
TO SYSTEM CONTROL & SERVO SECTION (Page 3-23/E-12)
TO I/O SECTION (Page 3-37/EE-10)
TO SYSTEM CONTROL & SERVO SECTION (Page 3-21/EE-1)
(REC AMP)
IC3001: 19 PLAY 7.0Vp-p(10msec div)
IC3003: 16 PLAY 0.4Vp-p(20μsec div)
IC3003: 9 PLAY 0.7Vp-p(20μsec div)
IC3003: 11 PLAY 0.4Vp-p(20μsec div)
IC3001: 46 PLAY 0.4Vp-p(2msec div)
IC3001: 41 PLAY 2.2Vp-p(20μsec div)
IC3001: 48 PLAY 0.3Vp-p(20μsec div)
IC3001: 49 PLAY 0.4Vp-p(20μsec div)
IC3001: 45 PLAY 5.0Vp-p(1msec div)
IC3001: 38/39 PLAY 300mVp-p(20μsec div)
IC3001: 36 PLAY 100mVp-p(20μsec div)
IC3001: 35 PLAY 0.7Vp-p(20μsec div)
IC3001: 32/33 PLAY/REC 0.8Vp-p(20μsec div)
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL. (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL. (SP MODE)
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.
WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-10. MOTOR DRIVE SECTION IN MAIN SCHEMATIC DIAGRAM

CYLINDER SERVO SPEED LOOP — CAPSTAN SERVO SPEED LOOP — - - - - CYLINDER SERVO PHASE LOOP



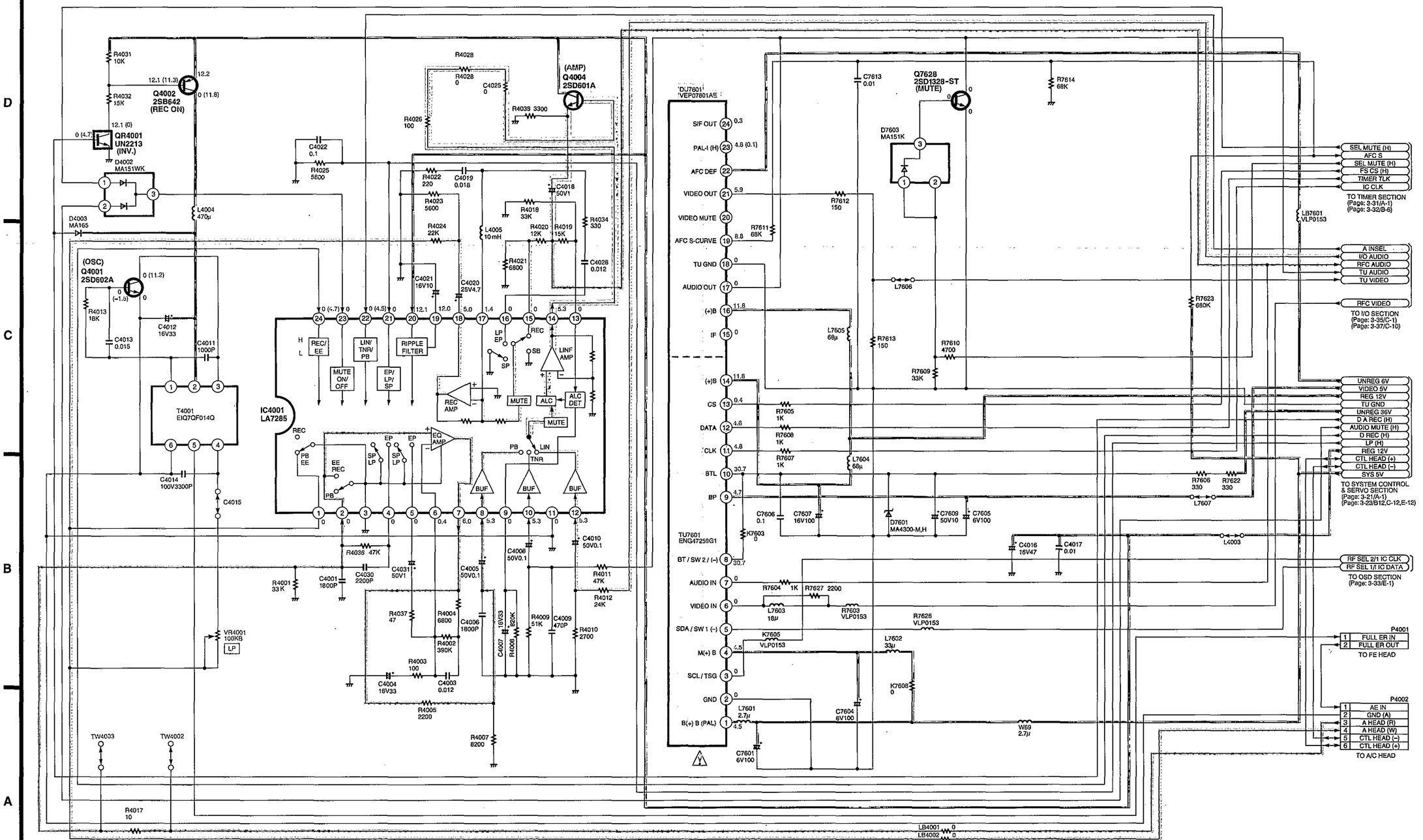
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL. (SP MODE)

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.
WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-11. AUDIO / RF SECTION IN MAIN SCHEMATIC DIAGRAM

AUDIO MAIN SIGNAL PATH IN REC MODE

AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE



NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL. (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL. (SP MODE)

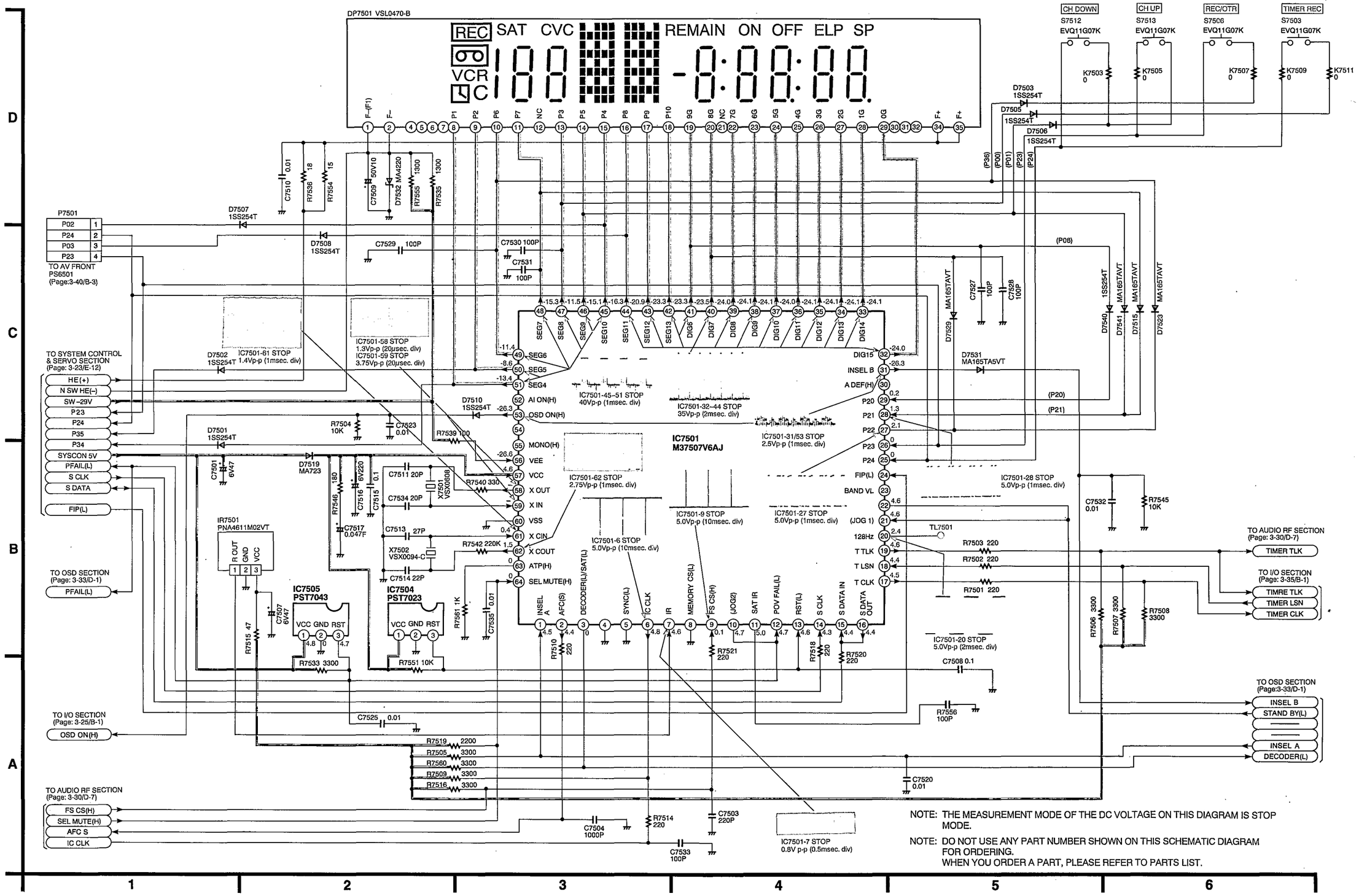
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.
WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

3-12. TIMER SECTION IN MAIN SCHEMATIC DIAGRAM

GRID CONTROL SIGNAL PATH

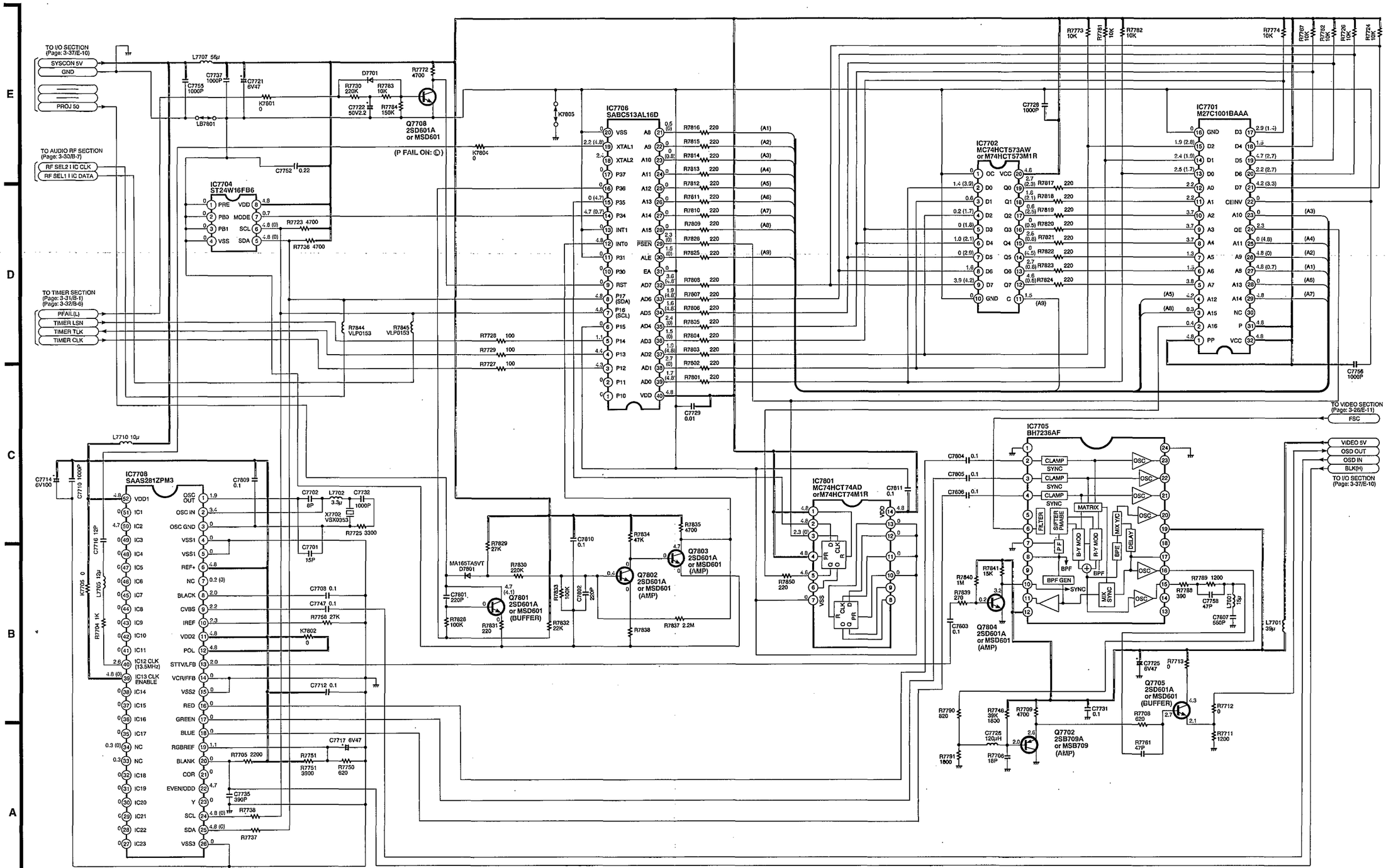
SEGMENT CONTROL SIGNAL PATH



NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

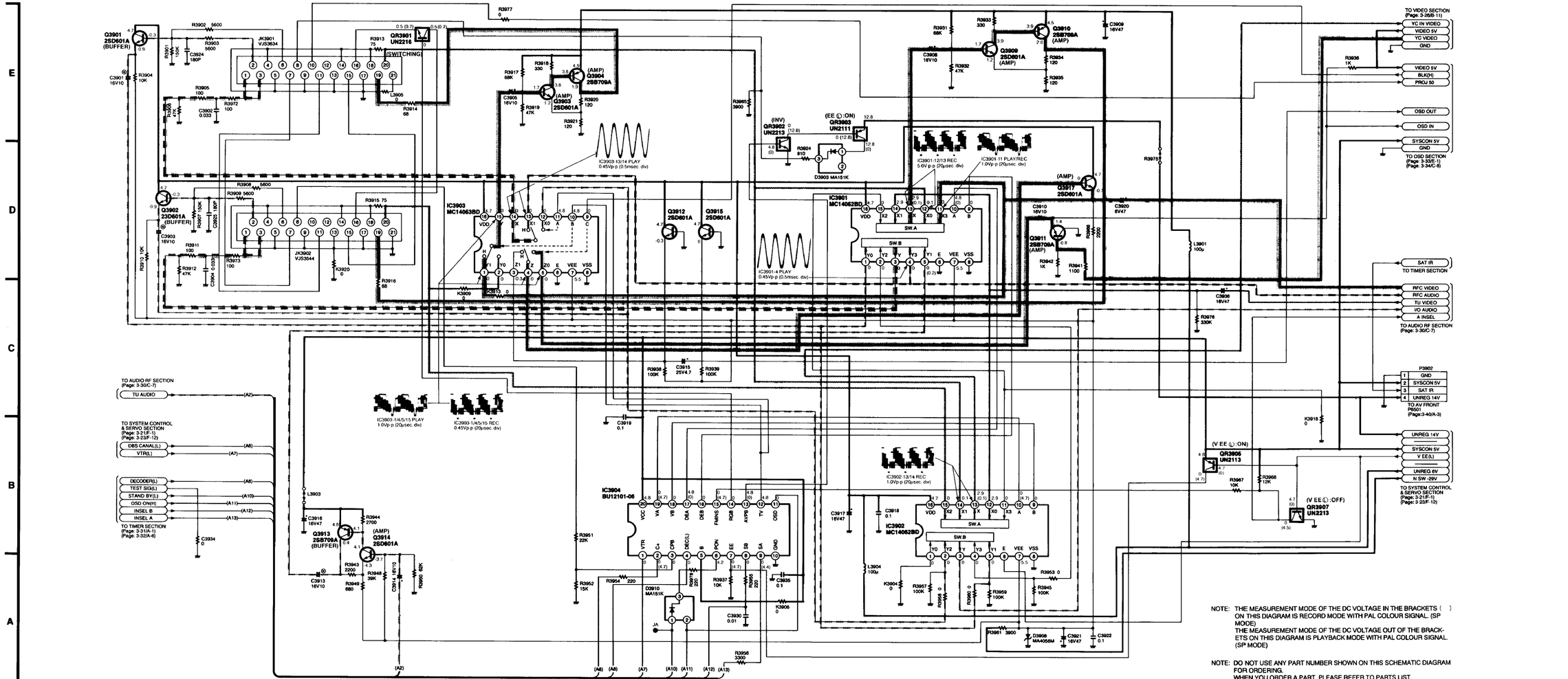
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.
WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-13. OSD SECTION IN MAIN SCHEMATIC DIAGRAM


TO I/O SECTION (Page: 3-37/E-10)
SYSCON 5V
GND
PROJ 50
TO AUDIO RF SECTION (Page: 3-30/B-7)
RF SEL2 I IC CLK
RF SEL1 I IC DATA
TO TIMER SECTION (Page: 3-31/B-1) (Page: 3-32/B-6)
PFAIL(L)
TIMER LSN
TIMER TLK
TIMER CLK
IC7704 ST24W16FB6
IC7706 SABC513AL16D
IC7702 MC74HCT573AW or M74HCT573M1R
IC7701 M27C1001BAAA
IC7708 SAAS281ZPM3
IC7705 BH7236AF
IC7801 MC74HCT74AD orM74HCT74M1R
Q7708 2SD601A or MSD601
Q7803 2SD601A or MSD601 (AMP)
Q7802 2SD601A or MSD601 (AMP)
Q7801 2SD601A or MSD601 (BUFFER)
Q7804 2SD601A or MSD601 (AMP)
Q7705 2SD601A or MSD601 (BUFFER)
Q7702 2SB709A or MSB709 (AMP)
MA165TA5VT D7801
X7702 VSX0353
TO VIDEO SECTION (Page: 3-20/E-11)
FSC
VIDEO 5V
OSD OUT
OSD IN
BLK(H)
TO I/O SECTION (Page: 3-37/E-10)
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL. (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL. (SP MODE)
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.
WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

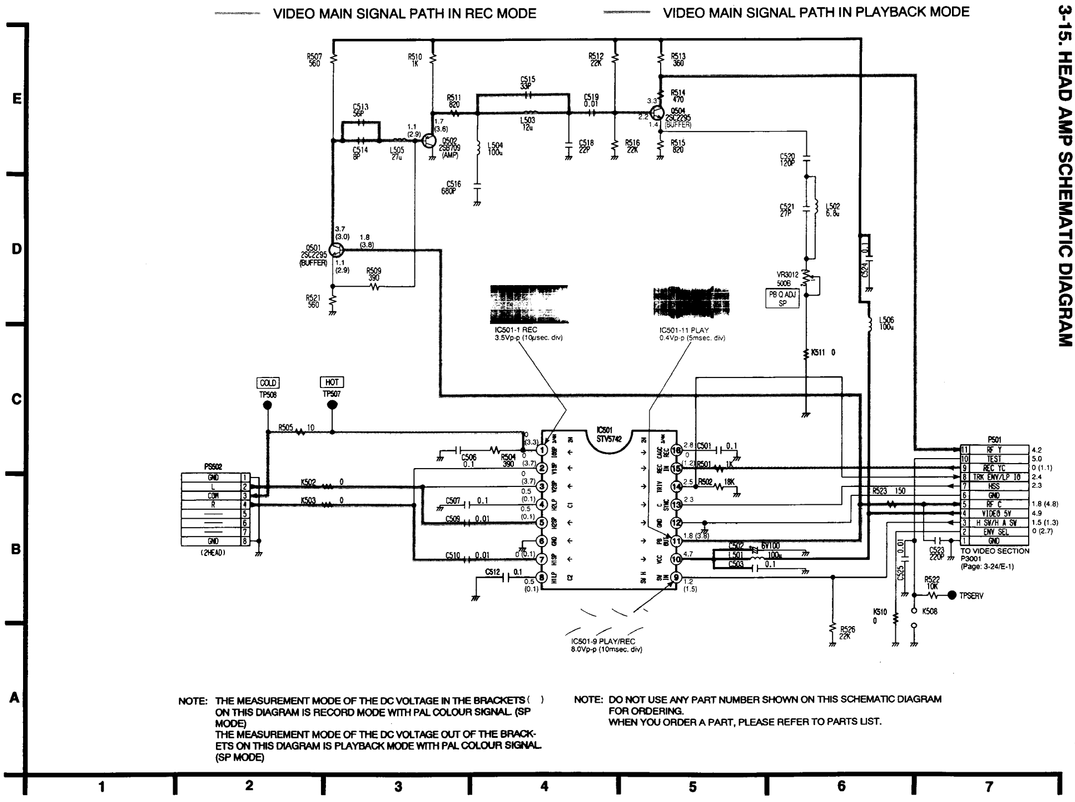
3-14. INPUT/OUTPUT SECTION IN MAIN SCHEMATIC DIAGRAM

VIDEO MAIN SIGNAL PATH IN REC MODE — VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE — AUDIO MAIN SIGNAL PATH IN REC MODE - - - - AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE



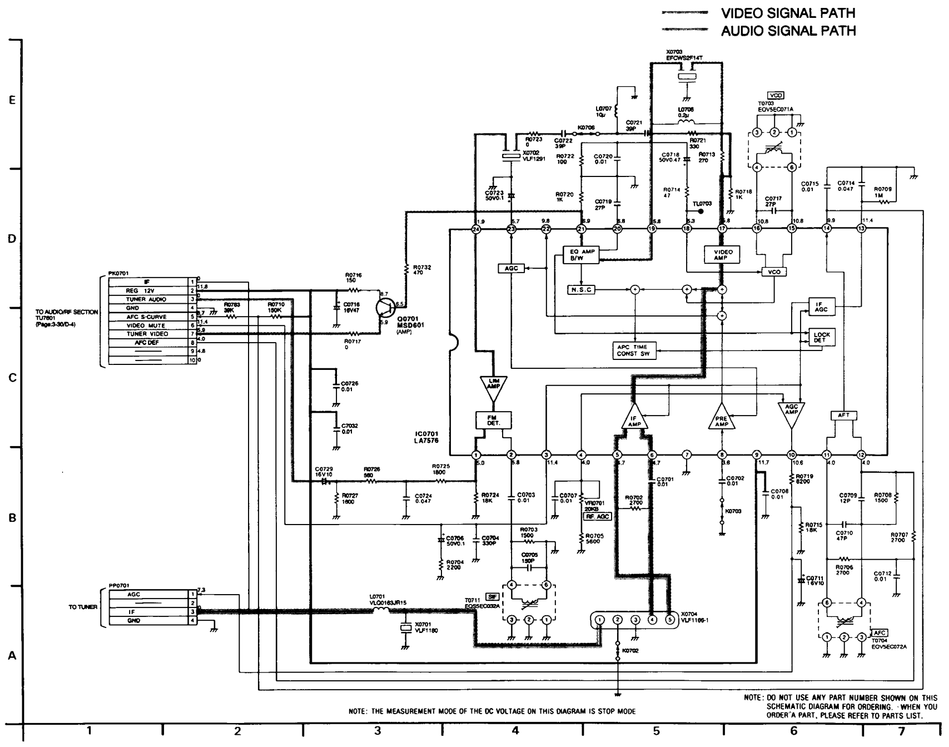
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL. (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL. (SP MODE)

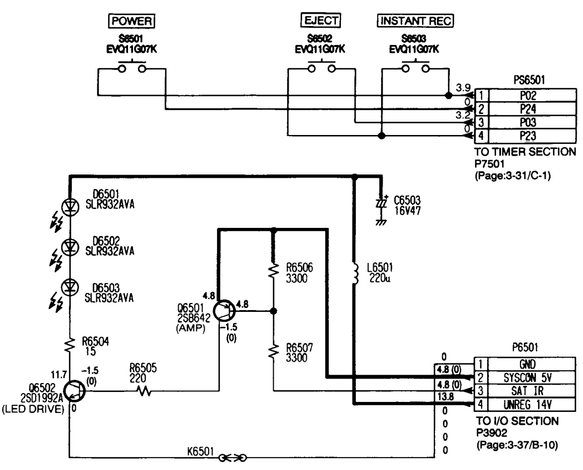
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.
WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.



NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL. (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL. (SP MODE)

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.
WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

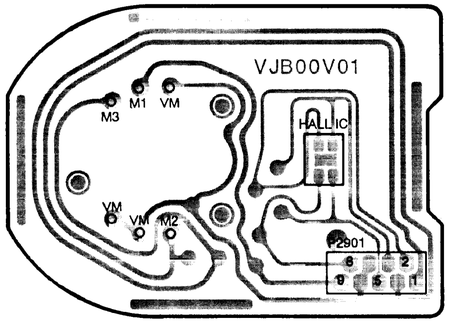




NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.
WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL. (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL. (SP MODE)

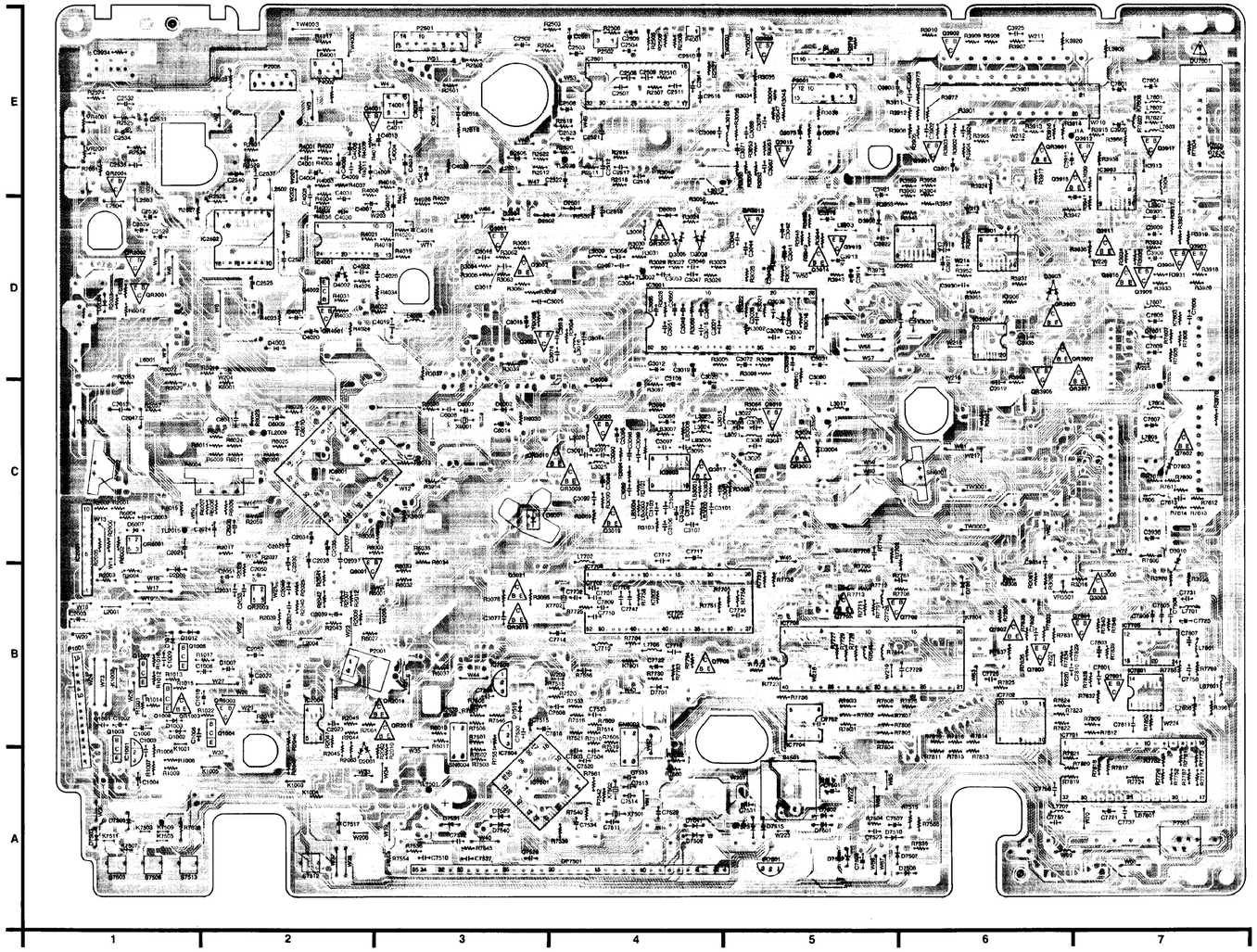
3-18. CYLINDER STATOR UNIT C.B.A.(VEK7236)



MAIN C.B.A.							
Transistor		Q7602	C-7	Integrated Circuit		JB	E-5
		Q7702	B-5			J1A	E-6
Q1003	A-1	Q7705	B-5	IC1001	A-1	J1B	C-7
Q1004	B-2	Q7708	B-4	IC2001	C-1	Test Wire	
Q1005	B-1	Q7801	B-7	IC2004	B-2		
Q1007	B-1	Q7802	B-6	IC2501	E-4	TW2001	E-5
Q1008	B-1	Q7803	B-6	IC2502	D-2	TW2002	C-1
Q3001	D-3	Q7804	B-7	IC3001	D-5	TW2051	D-1
Q3002	D-3	Transistor & Resistor		IC3003	C-4	TW3001	C-6
Q3003	D-3			IC3901	D-6	TW3002	C-6
Q3006	E-5			IC3902	D-6	TW3003	E-5
Q3008	B-7	QR1003	B-1	IC3903	E-7	TW4002	E-2
Q3010	C-5	QR2001	D-1	IC3904	D-6	TW4003	E-2
Q3015	E-5	QR2002	D-1	IC4001	D-2	Adjustment	
Q3017	C-4	QR2003	B-2	IC6001	C-2		
Q3019	C-4	QR2004	E-1	IC7501	A-3	VR2001	E-1
Q3020	C-4	QR2014	B-3	IC7504	B-3	VR2006	E-1
Q3021	B-3	QR2015	B-3	IC7505	B-3	VR4001	E-1
Q3901	E-6	QR3003	C-5	IC7701	A-7	VR5501	B-6
Q3902	E-6	QR3005	D-4	IC7702	B-6	Connector	
Q3903	D-7	QR3009	C-4	IC7704	B-5		
Q3904	D-7	QR3010	C-4	IC7705	B-7	P1001	B-1
Q3909	D-7	QR3013	D-5	IC7706	B-5	P2001	B-2
Q3910	D-7	QR3019	B-3	IC7708	B-4	P2502	E-4
Q3911	D-7	QR3901	E-6	IC7801	B-7	P3001	E-5
Q3912	E-7	QR3902	D-6	Test Land		P3902	E-5
Q3913	D-5	QR3903	D-6			P4001	E-4
Q3914	D-5	QR3905	D-6	TL2009	C-2	P4002	E-2
Q3915	E-6	QR3907	C-7	TL2015	C-1	P6004	C-2
Q3917	E-7	QR4001	D-2	TL2026	E-4	P7501	A-7
Q4001	E-2	QR6001	C-1	TL3002	D-4		
Q4002	D-2	QR6003	B-2	TL7501	A-3		
Q6001	B-2						

ADDRESS INFORMATION

3-19. MAIN C.B.A. (VEP06B99R)



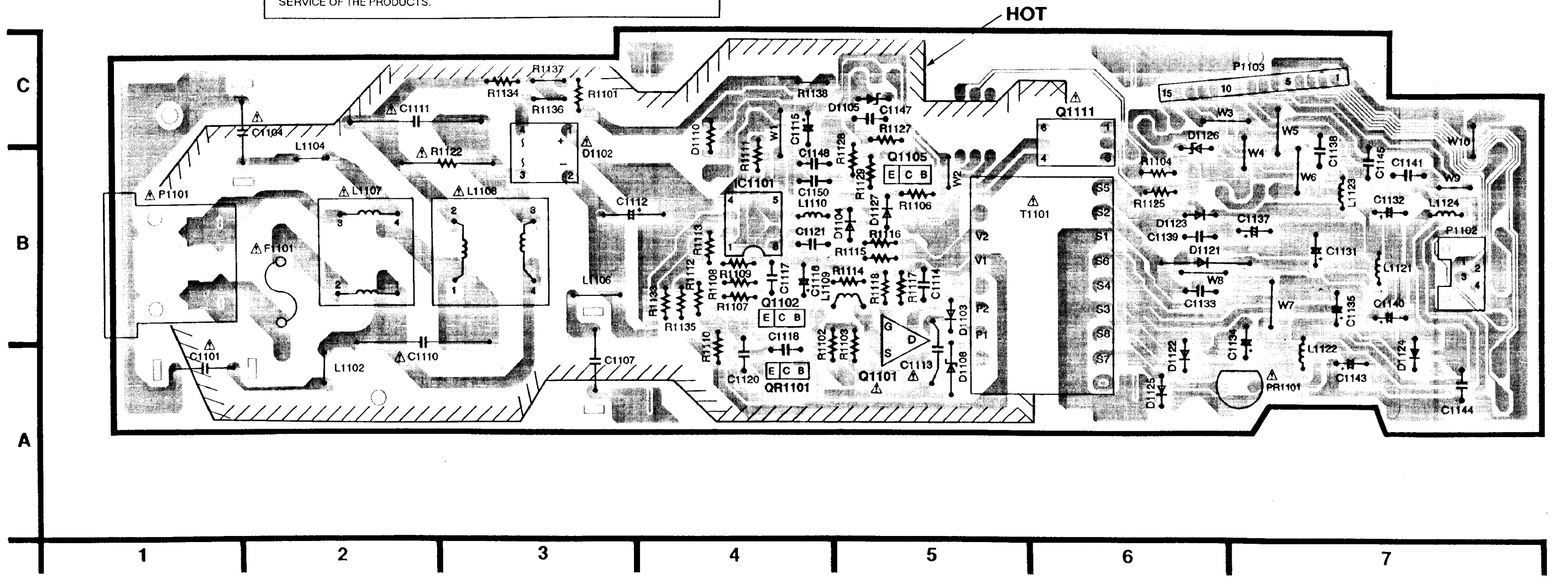
3-20. POWER C.B.A. (VEP01621J)

POWER C. B. A.			
Transistor		Integrated Circuit	
Q1101 Q1102 Q1105 Q1111	B-5 B-4 B-5 C-6	IC1101	B-4
		Connector	
Transistor & Resistor		P1101 P1102 P1103	B-1 B-7 C-7
QR1101	A-4		

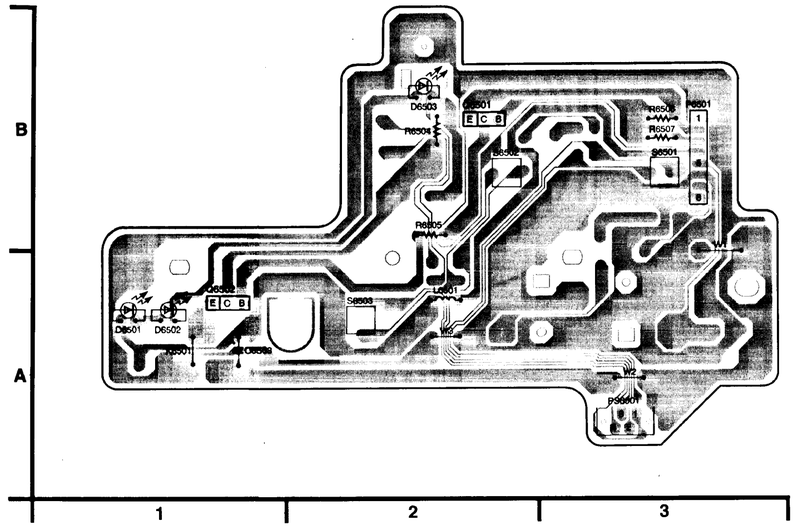
ADDRESS INFORMATION

CAUTION

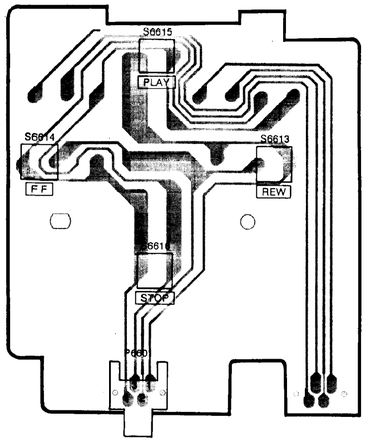
THE RED MARK INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.



3-21. AV FRONT C.B.A.(VEP06C00C)



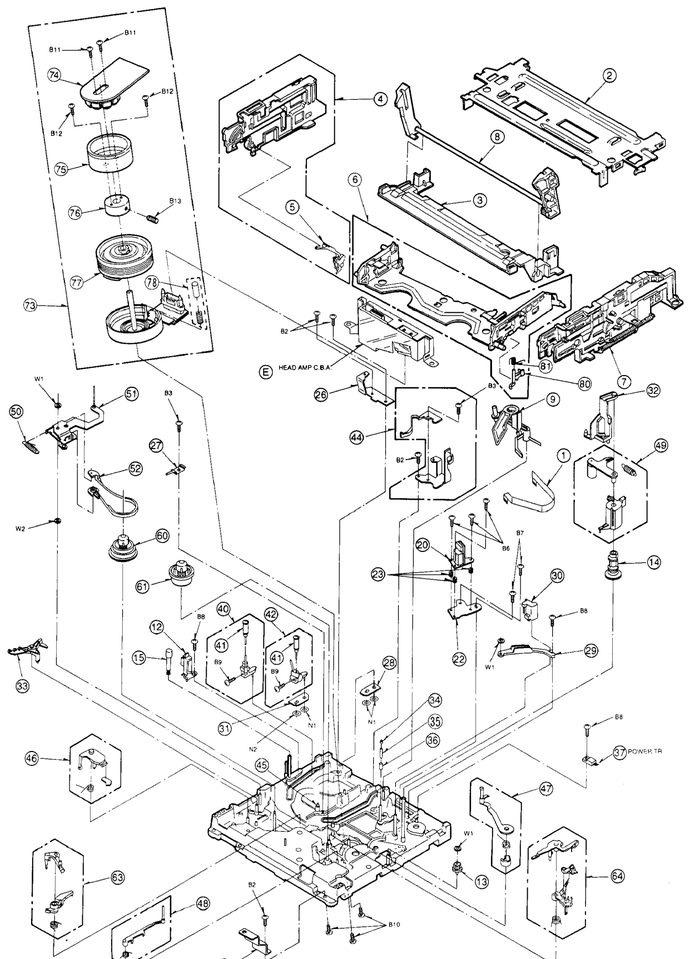
3-22. OPERATION C.B.A. (VEP06A20E)



SECTION 4
EXPLODED VIEWS & PARTS LIST

4-1. EXPLODED VIEW MECHANICAL REPLACEMENT PARTS LIST

1. CHASSIS PARTS SECTION (1)



4–1

Note: 1.* Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark < ! > have the special characteristics for safety.
When replacing any of these components, use only the same type.

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1 (1)	VMJ0758	FLAT CARD CABLE (6P)	1	P4002-AC HEAD
2 (1)	VMA8644	TOP PLATE	1	
3 (1)	VMA8787	CASSETTE GUIDE	1	
4 (1)	VXA4660	SIDE PLATE (L) UNIT	1	
5 (1)	VXL2250	OPENER LEVER UNIT	1	
6 (1)	VXA4661	CASSETTE HOLDER PLATE UNIT	1	
7 (1)	VXA4806	SIDE PLATE (R) UNIT	1	
8 (1)	VXP1339	MAIN SHAFT UNIT	1	
9 (1)	VML2908	CLEANER ARM UNIT	1	
12 (1)	VBS0052	FE HEAD	1	
13 (1)	VDG0871	CARRIAGE CONNECTION GEAR	1	
14 (1)	VDG0886	PINCH CAM GEAR	1	
15 (1)	VXP1402	IMPEDANCE ROLLER UNIT	1	
20 (1)	VED0217	A/C HEAD (1) UNIT	1	
22 (1)	VMA8624	A/C HEAD BASE	1	
23 (1)	VMB2515	A/C HEAD SPRING	3	
25 (1)	VMA8761	MOUNT ANGLE	1	
26 (1)	VMA9158	HEAD AMP MOUNT ANGLE (L)	1	
27 (1)	VMC0917	EARTH SPRING	1	
28 (1)	VMA8874	INCLIND BASE HOLDER (S)	1	
29 (1)	VMD2078	PS STOPPER BASE	1	
30 (1)	VXA4927	PS POST STOPPER	1	
31 (1)	VMA8873	INCLIND BASE HOLDER (T)	1	
32 (1)	VMD2101	OPENER PIECE	1	
33 (1)	VML2776	TENSION SPRING ARM	1	
34 (1)	VMX1544	P4 UPPER LIMITER	1	
35 (1)	VMX2175	P4 SLEEVE	1	
36 (1)	VMX2176	P4 LOWER LIMITER	1	
37 (1)	2SB1370YD01E	POWER TRANSISTOR	1	
40 (1)	VXA5245KIT	INCLINED BASE (S) UNIT	1	
41 (1)	VXP1826	ROLLER POST	2	
42 (1)	VXA5247KIT	INCLINED BASE (T) UNIT	1	
44 (1)	VXA4974	HEAD AMP MOUNT ANGLE (R) U.	1	
45 (1)	VMS5383	CASSETTE POSITION FIXTURE	1	
46 (1)	VXL2310	REVIEW ARM UNIT	1	
47 (1)	VXL2306	PS ARM UNIT	1	
48 (1)	VXL2394	TAKE UP TENSION REGULATOR	1	
49 (1)	VXL2246	PINCH ARM UNIT	1	
50 (1)	VMB2434	TENSION SPRING	1	
51 (1)	VXL2309	TENSION ARM (1) UNIT	1	
52 (1)	VXZ0310	TENSION BAND UNIT	1	
60 (1)	VXR0221	SUPPLY REEL TABLE UNIT	1	
61 (1)	VXR0237	TAKE UP REEL TABLE UNIT	1	
63 (1)	VXZ0312	SUPPLY BRAKE ARM UNIT	1	
64 (1)	VXZ0313	TAKE UP BRAKE ARM UNIT	1	
73 (1)	VEG1360	CYLINDER UNIT	1	[SUPPLIED FROM MBV]
⚠ 74 (1)	VEK7236	STATOR UNIT	1	
75 (1)	VXP1823	ROTOR UNIT	1	
76 (1)	VDB1256	CYLINDER RETAINER	1	
77 (1)	VEH0832	UPPER CYLINDER UNIT	1	[SUPPLIED FROM MBV]
78 (1)	VXS0135	EARTH BRUSH UNIT	1	
80 (1)	VML2680	RELEASE LEVER	1	
81 (1)	VMB2013	RELEASE SPRING	1	
B2 (1)	XTV26+6F	SCREW	4	
B3 (1)	XTV26+4F	SCREW	2	
B6 (1)	VHD0762	SCREW	3	
B7 (1)	XTV26+6FZ	SCREW	2	
B8 (1)	XTV26+8F	SCREW	3	
B9 (1)	XQN2+AJ4	SCREW	2	
B10 (1)	VHD0342	SCREW	3	
B11 (1)	VHD0844	SCREW	2	
B12 (1)	VHD0435	SCREW	2	
B13 (1)	VHD0842	SCREW	1	
N1 (1)	VHN0192	NUT	3	
N2 (1)	VHN0193	NUT	1	
W1 (1)	VMX2208	WASHER	3	
W2 (1)	XMGV26D5G	WASHER	1	

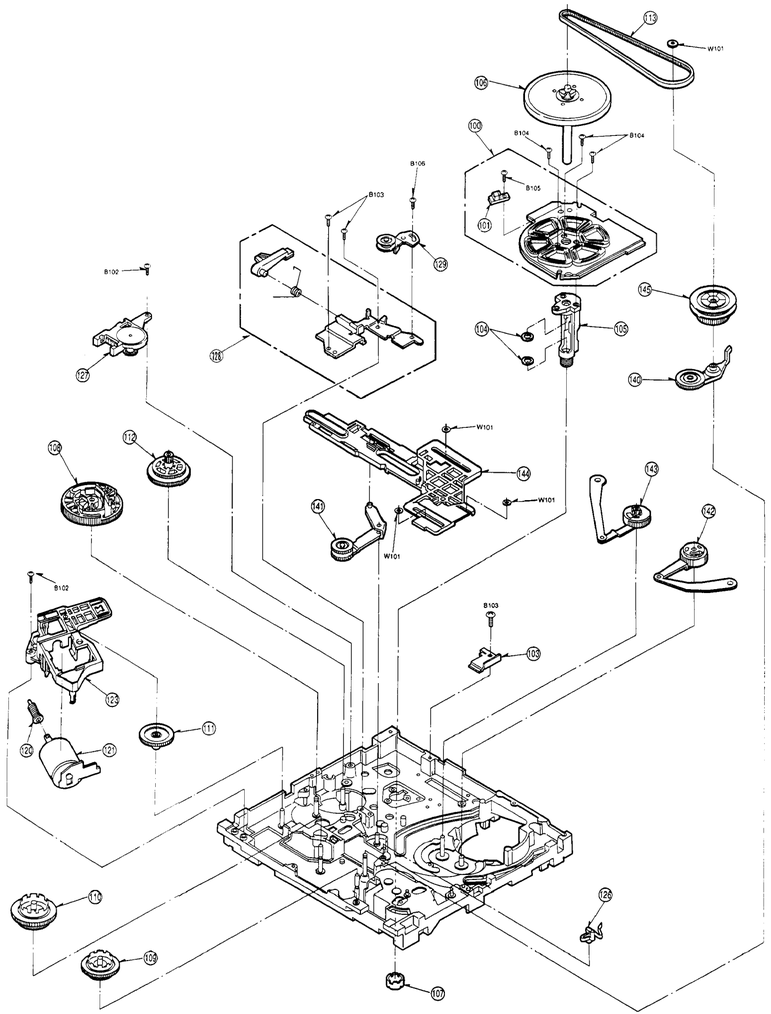
4–2

Note: 1.* Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark < ! > have the special characteristics for safety.
When replacing any of these components, use only the same type.

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
100 (2)	VEK5927	STATOR UNIT	1	
101 (2)	VBK0061	FG HEAD	1	
103 (2)	VMA8930	ROTOR STOPPER	1	
104 (2)	VMX1927	OIL SEAL	2	
105 (2)	VXD0140	HOUSING UNIT	1	
106 (2)	VXP1519	ROTOR UNIT	1	
107 (2)	VXQ0297	THRUST SCREW UNIT	1	
108 (2)	VDG0913	MAIN CAM GEAR	1	
109 (2)	VDG0956	SUPPLY REEL GEAR	1	
110 (2)	VDG0957	TAKE UP REEL GEAR	1	
111 (2)	VDG0868	WORM WHEEL GEAR	1	
112 (2)	VDG0885	SUB CAM GEAR	1	
113 (2)	VDV0235	TIMING BELT	1	
120 (2)	VDG0866	WORM GEAR	1	
121 (2)	VEM0427	LOADING MOTOR (1) UNIT	1	
123 (2)	VMD1942	MOTOR BRACKET	1	
126 (2)	VML2725	IDLER CONTROL LEVER	1	
127 (2)	VSS0365	MODE SW	1	
128 (2)	VXA5138	SS BRAKE BASE UNIT	1	
129 (2)	VXA4799	TENSION ROLLER UNIT	1	
140 (2)	VXL2378	IDLER ARM UNIT	1	
141 (2)	VXL2372	DIRECT LEVER UNIT	1	
142 (2)	VXL2299	SUPPLY LOADING ARM UNIT	1	
143 (2)	VXL2300	TAKE UP LOADING ARM UNIT	1	
144 (2)	VXL2307	MAIN LEVER UNIT	1	
145 (2)	VXP1409	CENTRE CLUTCH	1	
B102 (2)	XTV26+8F	SCREW	2	
B103 (2)	XTV26+6F	SCREW	3	
B104 (2)	VHD0753	SCREW	3	
B105 (2)	VHD0754	SCREW	1	
B106 (2)	XSB26+4FZ	SCREW	1	
W101 (2)	VMX2208	WASHER	4	

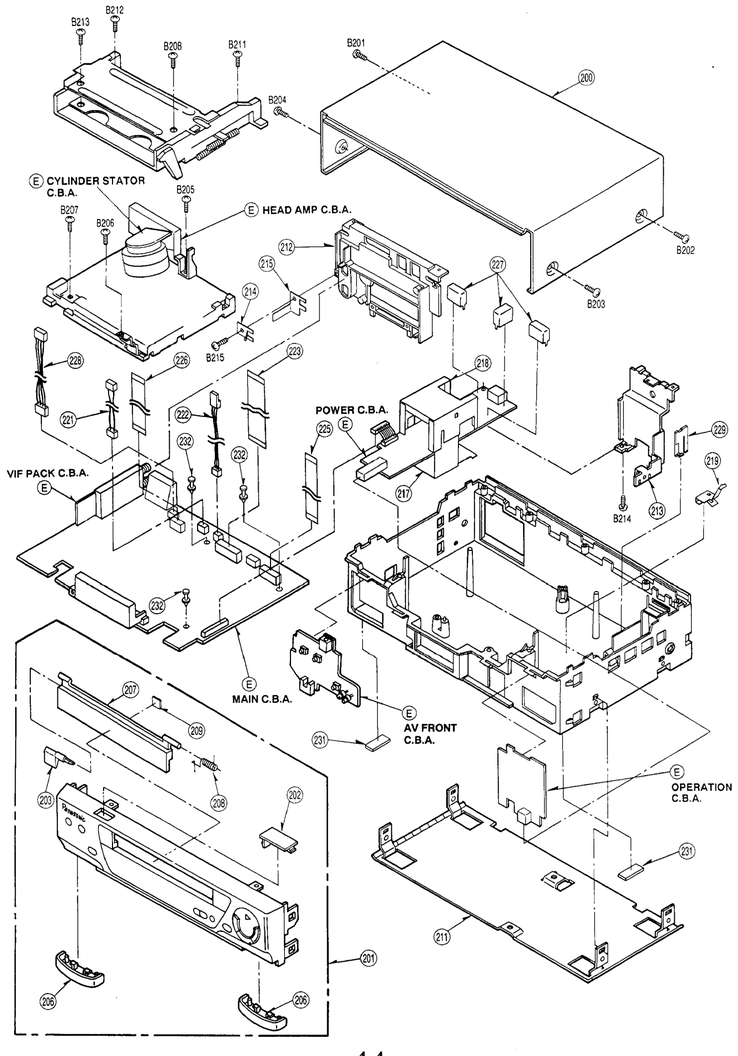
4–2

2. CHASSIS PARTS SECTION (2)



4–3

3. CASING PARTS SECTION



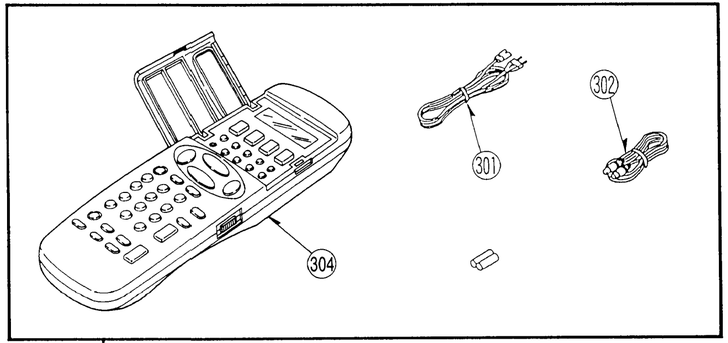
Note: 1.* Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark < ! > have the special characteristics for safety.
When replacing any of these components, use only the same type.

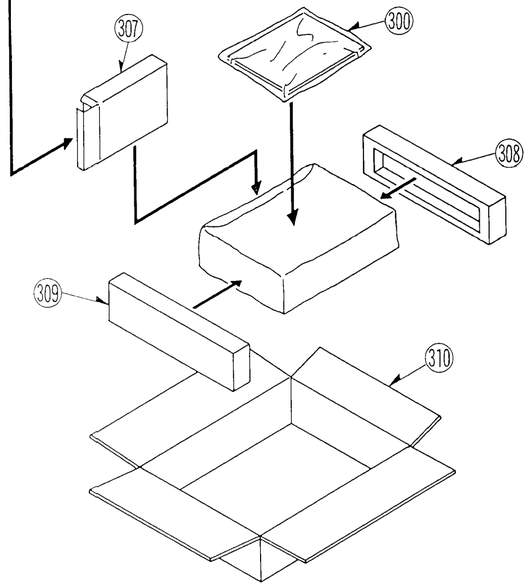
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
200 (3)	VGM1144	TOP PANEL	1	[SUPPLIED FROM MBV]
201 (3)	VYP6446	FRONT PANEL UNIT	1	[SUPPLIED FROM MBV]
202 (3)	VKM2222	SAT FILTER	1	[SUPPLIED FROM MBV]
203 (3)	VDK0148	BLINDER CAM	1	
206 (3)	VKA0191	LEG	1	[SUPPLIED FROM MBV]
207 (3)	VKF2709	BLINDER PANEL	1	[SUPPLIED FROM MBV]
208 (3)	VMB2521	BLINDER SPRING	1	
209 (3)	VMT0502	PAD	1	
211 (3)	VKU0410	BOTTOM PLATE	1	[SUPPLIED FROM MBV]
212 (3)	VJH0982	JACK BOARD	1	[SUPPLIED FROM MBV]
213 (3)	VMP4593	POWER PLATE	1	
214 (3)	VMG1109	RF SPRING	1	
215 (3)	VMP4591	SIDE ANGLE	1	
⚠ 217 (3)	VMZ2378	BARRIER	1	
218 (3)	VSC4205	POWER SHIELD COVER	1	
219 (3)	VMG1065	EARTH SPRING	1	
221 (3)	VEE9278	WIRE CABLE (2P)	1	[SUPPLIED FROM MBV]
				P4001-FE HEAD
222 (3)	VEE9277	WIRE CABLE (3P)	1	[SUPPLIED FROM MBV]
				P2502-POWER TR
223 (3)	VMJ0913	FLAT CARD CABLE (15P)	1	[SUPPLIED FROM MBV]
				P2501-P1507
225 (3)	VMJ1098	FLAT CARD CABLE (9P)	1	[SUPPLIED FROM MBV]
				P2005-UDD CYLINDER
226 (3)	VMJ0922	FLAT CARD CABLE (11P)	1	[SUPPLIED FROM MBV]
				P501-P3001
⚠ 227 (3)	VMZ2212	CAPACITOR COVER	3	
228 (3)	VEE0A21	WIRE CABLE (4P)	1	[SUPPLIED FROM MBV]
				P6502-P3902
229 (3)	VMG1083	EARTH SPRING (A)	1	[SUPPLIED FROM MBV]
231 (3)	VKA0122	FOOT	2	
232 (3)	VMX2233	C.B.A. SPACER	3	
B201-B204	VHD0378	SCREW	4	
B205-B207	VHD0168	SCREW	3	
B208	XTV26+10F	SCREW	1	
B211-B213	XTV26+8FR	SCREW	3	
B214	VHD0418	SCREW	1	
B215	XTV3+8G	SCREW	1	

Note: 1.* Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark < ! > have the special characteristics for safety.
When replacing any of these components, use only the same type.

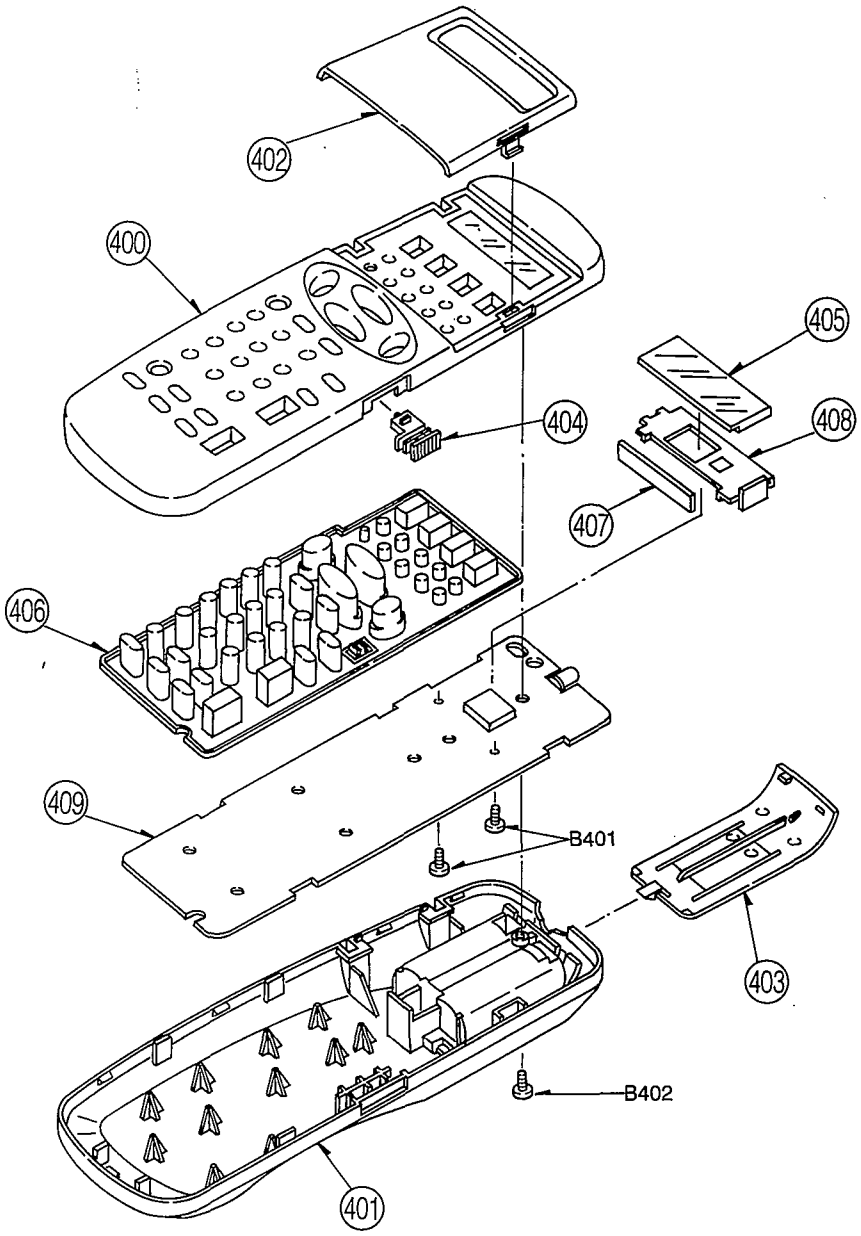
Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
⚠ 300 (4)	VQT6945	OPERATING INSTRUCTIONS (ENGLISH)	1	[SUPPLIED FROM MBV]
⚠ 301 (4)	VJA0733	AC CORD	1	
302 (4)	VJA0728	DIN RF CABLE	1	[SUPPLIED FROM MBV]
304 (4)	VEQ1953	REMOTE CONTROLLER	1	[SUPPLIED FROM MBV]
307 (4)	VPK0825	ACCESSORY BOX	1	
308 (4)	VPN4415	CUSHION (R)	1	[SUPPLIED FROM MBV]
309 (4)	VPN4416	CUSHION (L)	1	[SUPPLIED FROM MBV]
310 (4)	VPG8877	PACKING CASE	1	[SUPPLIED FROM MBV]

4. PACKING PARTS SECTION





5. REMOTE CONTROLLER UNIT



Note: 1.* Be sure to make your orders of replacement parts according to this list.

2. IMPORTANT SAFETY NOTICE
Components identified with the mark < ! > have the special characteristics for safety.
When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
400 (6)	VYK7622	TOP COVER UNIT	1	[SUPPLIED FROM MBV]
401 (6)	VYK7176	BOTTOM COVER UNIT	1	
402 (6)	VGP4395	DOOR PANEL	1	
403 (6)	VKF2670	BATTERY COVER UNIT	1	
404 (6)	VGU7307	SWITCH	1	
406 (6)	VSP1043	RUBBER CONTACT	1	[SUPPLIED FROM MBV]
409 (6)	----------	REMOTE CONTROLLER C.B.A.	1	THIS C.B.A. IS NOT
				SUPPLIED AS SPARE PART.
B401 (6)	XTB2+6G	SCREW	2	
B402 (6)	XTB2+8GFZ	SCREW	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
		SERVICE FIXTURES & TOOLS		
	VFJ8125H3F	VHS ALIGNMENT TAPE (PAL)	1	
	VFK0335	RETAINING RING REMOVER	1	
		(3mm/4mm)		
	VFK0329	POST ADJUSTMENT SCREWDRIVER	1	
	VFK0326	HEX WRENCH SET	1	
	VFK0132	BACK TENSION METER	1	
	VFK27	HEAD CLEANING STICK	1	
	MOR265	MORLYTONE GREASE	1	
	VFK0341	UPPER CYLINDER REMOVER	1	
	VFK0680	WHITE GREASE	1	
	VFK0851	STATOR CENTERING TOOL	1	
	VFK0330	FINE ADJUSTMENT GEAR DRIVER	1	

4-2. ELECTRICAL REPLACEMENT PARTS LIST

Note: 1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE : Components identified with the mark < ! > have the special characteristics for safety. When replacing any of these components, use only the same type.
3. Unless otherwise specified,
All resistors are in OHMS , K=1,000 OHMS. All capacitors are in MICRO-FARADS(uf) , P=uuF.
4. The P.C.Board units marked width' ■ 'show below the main assembled parts.
5. The marking(RTL) indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
■	VEP06B99R	MAIN C. B. A.	1	[SUPPLIED FROM MBV]
		(Page:4-8)		(RTL)
				INCLUDING THE TV DEMODU.
				C. B. A. (VEP07801AF).
■	VEP07801AF	TV DEMODULATOR PACK C. B. A	1	[SUPPLIED FROM MBV]
				(RTL)
				C. B. A. IS INCLUDED IN
				MAIN C. B. A. (VEP06B99R).
■	VEP05360C	HEAD AMP C. B. A.	1	[SUPPLIED FROM MBV]
		(Page:4-13)		(RTL)
■	VEP06A20E	OPERATION (R) C. B. A.	1	[SUPPLIED FROM MBV]
		(Page:4-14)		(RTL)
■	VEP06C00C	AV FRONT C. B. A.	1	[SUPPLIED FROM MBV]
		(Page:4-14)		(RTL)
⚠ ■	VEP01621J	SWITCH POWER C. B. A.	1	[SUPPLIED FROM MBV]
		(Page:4-14)		(RTL)
■	————	CYLINDER STATOR C. B. A.	1	C. B. A. IS INCLUDED IN
		(Page:4-15)		CYLINDER STATOR UNIT
				(VEK7236).
■	————	MOTOR C. B. A.	1	C. B. A. IS INCLUDED IN
		(Page:4-15)		LOADING MOTOR (1) UNIT
				(VEM0427).
⚠ TU7601	ENG47258G1	TUNER	1	
⚠ F1101	VSF0231C16	FUSE	1	
■	VEP06B99R	MAIN C. B. A.		[SUPPLIED FROM MBV]
				(RTL)
C0701-03	ECUX1H103ZFV	C. CAPACITOR CH 50V 0. 01U	3	
C0704	ECUX1H331JCV	C. CAPACITOR CH 50V 330P	1	
C0705	ECUX1H151JCV	C. CAPACITOR CH 50V 150P	1	
C0706	ECEA1HKA0R1	E. CAPACITOR 50V 0. 1U	1	
C0707, 08	ECUX1H103ZFV	C. CAPACITOR CH 50V 0. 01U	2	
C0709	ECUX1H120JCV	C. CAPACITOR CH 50V 12P	1	
C0710	ECUX1H470JPV	C. CAPACITOR CH 50V 47P	1	
C0711	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C0712	ECUX1H103ZFV	C. CAPACITOR CH 50V 0. 01U	1	
C0714	ECQB1H473JF	P. CAPACITOR 50V 0. 047U	1	
C0715	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C0716	ECEA1CKA470	E. CAPACITOR 16V 47U	1	
C0717	ECUX1H270JPV	C. CAPACITOR CH 50V 27P	1	
C0718	ECEA1HKAR47	E. CAPACITOR 50V 0. 47U	1	
C0719	ECUX1H220JCV	C. CAPACITOR CH 50V 22P	1	
C0720	ECUX1H103ZFV	C. CAPACITOR CH 50V 0. 01U	1	
C0721, 22	ECUX1H390JCV	C. CAPACITOR CH 50V 39P	2	
C0723	ECEA1HKA0R1	E. CAPACITOR 50V 0. 1U	1	
C0724	ECQB1H473JF	P. CAPACITOR 50V 0. 047U	1	
C0726	ECUX1H103ZFV	C. CAPACITOR CH 50V 0. 01U	1	
C0729	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C0732	ECUX1H103ZFV	C. CAPACITOR CH 50V 0. 01U	1	
C1001	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C1002	ECEA0JKA220	E. CAPACITOR 6. 3V 22U	1	
C1003	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C1004	ECEA0JKA101	E. CAPACITOR 6. 3V 100U	1	
C1005	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C1006, 07	ECEA1CKA101	E. CAPACITOR 16V 100U	2	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C1008	ECEA0JKA220	E. CAPACITOR 6. 3V 22U	1	
C1009	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C1010	ECEA0JKA101	E. CAPACITOR 6. 3V 100U	1	
C2003	ECEA1EKA470	E. CAPACITOR 25V 47U	1	
C2013	ECKF1H103ZF	C. CAPACITOR 50V 0. 01U	1	
C2022	ECEA1EKA330	E. CAPACITOR 25V 33U	1	
C2023	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C2024	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C2025	ECUM1C105ZFM	C. CAPACITOR CH 16V 1U	1	
C2029, 30	ECUM1H471JCN	C. CAPACITOR CH 50V 470P	2	
C2031	ECUM1H392KBN	C. CAPACITOR CH 50V 3900P	1	
C2032	ECUM1H223KBN	C. CAPACITOR CH 50V 0. 022U	1	
C2033	ECEA0JKA221	E. CAPACITOR 6. 3V 220U	1	
C2034	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C2035	ECEA1HKA3R3	E. CAPACITOR 50V 3. 3U	1	
C2037	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C2038	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C2039	ECEA0JKA220	E. CAPACITOR 6. 3V 22U	1	
C2040	ECUM1H222KBN	C. CAPACITOR CH 50V 2200P	1	
C2047	ECQV1H683JM	P. CAPACITOR 50V 0. 068U	1	
C2050, 51	ECEA1HKN3R3	E. CAPACITOR 50V 3. 3U	2	
C2052	ECEA0JKA221	E. CAPACITOR 6. 3V 220U	1	
C2501, 02	ECEA1HKA2R2	E. CAPACITOR 50V 2. 2U	2	
C2503	ECA1EM470	E. CAPACITOR 25V 47U	1	
C2504	ECEA1HKNR22	E. CAPACITOR 50V 0. 22U	1	
C2505	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C2506	ECA1EM470	E. CAPACITOR 25V 47U	1	
C2507, 08	ECUM1E333KBN	C. CAPACITOR CH 25V 0. 033U	2	
C2509	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C2510	ECA0JM221	E. CAPACITOR 6. 3V 220U	1	
C2511	ECUM1E333KBN	C. CAPACITOR CH 25V 0. 033U	1	
C2512	ECQV1H683JM	P. CAPACITOR 50V 0. 068U	1	
C2513	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C2514-16	ECUM1E333KBN	C. CAPACITOR CH 25V 0. 033U	3	
C2517	ECUM1H680JCN	C. CAPACITOR CH 50V 68P	1	
C2518	ECUM1C474ZFN	C. CAPACITOR CH 16V 0. 47U	1	
C2521	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C2522	ECA1CM221	E. CAPACITOR 16V 220U	1	
C2523	ECEA1HKA2R2	E. CAPACITOR 50V 2. 2U	1	
C2525	ECEA0JKA470	E. CAPACITOR 6. 3V 47U	1	
C2527	ECQV1H683JM	P. CAPACITOR 50V 0. 068U	1	
C2528-30	ECEA1HKA0R1	E. CAPACITOR 50V 0. 1U	3	
C2532-34	ECEA1VKN4R7	E. CAPACITOR 35V 4. 7U	3	
C2535	ECUM1C473KBN	C. CAPACITOR CH 16V 0. 047U	1	
C2537	ECQV1H683JM	P. CAPACITOR 50V 0. 068U	1	
C2538	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C2540	ECEA1HKAR47	E. CAPACITOR 50V 0. 47U	1	
C3012	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C3013	ECUM1H470JCN	C. CAPACITOR CH 50V 47P	1	
C3014	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C3015	ECEA0JKA470	E. CAPACITOR 6. 3V 47U	1	
C3016	ECUM1H392KBN	C. CAPACITOR CH 50V 3900P	1	
C3017	ECUM1H152KBN	C. CAPACITOR CH 50V 1500P	1	
C3018	ECUM1H223KBN	C. CAPACITOR CH 50V 0. 022U	1	
C3019	ECEA1EKA4R7	E. CAPACITOR 25V 4. 7U	1	
C3020	ECEA1EKN4R7	E. CAPACITOR 25V 4. 7U	1	
C3021	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C3025	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C3028, 29	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	2	
C3030	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C3031	ECEA1CKA101	E. CAPACITOR 16V 100U	1	
C3034	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C3037	ECUM1H470JCN	C. CAPACITOR CH 50V 47P	1	
C3038	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C3039	ECUM1H222KBN	C. CAPACITOR CH 50V 2200P	1	
C3040	ECUM1E333KBN	C. CAPACITOR CH 25V 0. 033U	1	
C3041, 42	ECEA1HKA010	E. CAPACITOR 50V 1U	2	
C3043	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C3044	ECUM1C474ZFN	C. CAPACITOR CH 16V 0. 47U	1	
C3045	ECUM1H103ZFN	C. CAPACITOR CH 50V 0. 01U	1	
C3046	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C3047	ECUM1H681JCN	C. CAPACITOR CH 50V 680P	1	
C3048	ECUM1H390JCN	C. CAPACITOR CH 50V 39P	1	
C3049	ECUM1H104ZFN	C. CAPACITOR CH 50V 0. 1U	1	
C3050	ECUM1H223KBN	C. CAPACITOR CH 50V 0. 022U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C3051	ECUM1H102JCN	C. CAPACITOR CH 50V 1000P	1	
C3053	ECUM1H330JCN	C. CAPACITOR CH 50V 33P	1	
C3054	ECEA1EKA4R7	E. CAPACITOR 25V 4.7U	1	
C3055	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C3056	ECUM1H470JCN	C. CAPACITOR CH 50V 47P	1	
C3057	ECUM1H820JCN	C. CAPACITOR CH 50V 82P	1	
C3067	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C3068	ECUM1H220JCN	C. CAPACITOR CH 50V 22P	1	
C3069	ECUM1H181JCN	C. CAPACITOR CH 50V 180P	1	
C3071	ECUM1H680JCN	C. CAPACITOR CH 50V 68P	1	
C3072	ECEA0JKA101	E. CAPACITOR 6.3V 100U	1	
C3073	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C3074	ECUM1C105ZFN	C. CAPACITOR CH 16V 1U	1	
C3075	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C3076	ECUM1H101JCN	C. CAPACITOR CH 50V 100P	1	
C3077	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C3080	ECUM1H563ZFN	C. CAPACITOR CH 50V 0.056U	1	
C3081	ECUM1H220JCN	C. CAPACITOR CH 50V 22P	1	
C3085	ECUM1H681JCN	C. CAPACITOR CH 50V 680P	1	
C3086	ECUM1H330JCN	C. CAPACITOR CH 50V 33P	1	
C3088	ECEA0JKA101	E. CAPACITOR 6.3V 100U	1	
C3089	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C3090	ECUM1H080DCN	C. CAPACITOR CH 50V 8P	1	
C3091	ECUM1H270JCN	C. CAPACITOR CH 50V 27P	1	
C3092, 93	ECUM1H101JCN	C. CAPACITOR CH 50V 100P	2	
C3095	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C3096	ECEA0JKA221	E. CAPACITOR 6.3V 220U	1	
C3097	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C3098	ECUM1H103KBN	C. CAPACITOR CH 50V 0.01U	1	
C3099	ECUM1H472KBN	C. CAPACITOR CH 50V 4700P	1	
C3100	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C3101	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C3102	ECEA1HKA0R1	E. CAPACITOR 50V 0.1U	1	
C3103, 04	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	2	
C3105	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C3106, 07	ECUM1H100DCN	C. CAPACITOR CH 50V 10P	2	
C3901	ECEA1CKN100	E. CAPACITOR 16V 10U	1	
C3902	ECUM1E333KBN	C. CAPACITOR CH 25V 0.033U	1	
C3903	ECEA1CKN100	E. CAPACITOR 16V 10U	1	
C3904	ECUM1E333KBN	C. CAPACITOR CH 25V 0.033U	1	
C3905	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C3908	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C3909	ECEA1CKA470	E. CAPACITOR 16V 47U	1	
C3910	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C3913	ECEA1CKN100	E. CAPACITOR 16V 10U	1	
C3914	ECEA1CKA100	E. CAPACITOR 16V 10U	1	
C3915	ECEA1EKA4R7	E. CAPACITOR 25V 4.7U	1	
C3916, 17	ECEA1CKA470	E. CAPACITOR 16V 47U	2	
C3918, 19	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	2	
C3920	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C3921	ECEA1CKA470	E. CAPACITOR 16V 47U	1	
C3922	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C3924, 25	ECUM1H181JCN	C. CAPACITOR CH 50V 180P	2	
C3930	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C3934	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
C3935	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C3936	ECEA1CKA470	E. CAPACITOR 16V 47U	1	
C4001	ECUM1H182JN	C. CAPACITOR CH 50V 1800P	1	
C4003	ECQB1H123KF	P. CAPACITOR 50V 0.012U	1	[SUPPLIED FROM MBV]
C4004	ECEA1CKA330	E. CAPACITOR 16V 33U	1	
C4005	ECEA1HKSOR1	E. CAPACITOR 50V 0.1U	1	
C4006	ECUM1H182JN	C. CAPACITOR CH 50V 1800P	1	
C4007	ECEA1CKA330	E. CAPACITOR 16V 33U	1	
C4008	ECEA1HKSOR1	E. CAPACITOR 50V 0.1U	1	
C4009	ECUM1H471JCN	C. CAPACITOR CH 50V 470P	1	
C4010	ECEA1HKA0R1	E. CAPACITOR 50V 0.1U	1	
C4011	ECUM1H102KBN	C. CAPACITOR CH 50V 1000P	1	
C4012	ECEA1CKA330	E. CAPACITOR 16V 33U	1	
C4013	ECUM1H153KBN	C. CAPACITOR CH 50V 0.015U	1	
C4014	ECQP1332JZ	P. CAPACITOR 100V 3300P	1	
C4016	ECEA1CKA470	E. CAPACITOR 16V 47U	1	
C4018	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C4019	ECQB1H183JF	P. CAPACITOR 50V 0.018U	1	
C4020	ECEA1EKA4R7	E. CAPACITOR 25V 4.7U	1	
C4021	ECEA1CKA100	E. CAPACITOR 16V 10U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C4022	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C4025	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
C4028	ECUM1H123KBN	C. CAPACITOR CH 50V 0.012U	1	
C4030	ECUM1H222JN	C. CAPACITOR CH 50V 2200P	1	
C4031	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C6003	ECUM1C224ZFN	C. CAPACITOR CH 16V 0.22U	1	
C6006	ECUM1H472KBN	C. CAPACITOR CH 50V 4700P	1	
C6007	ECUM1H180JCN	C. CAPACITOR CH 50V 18P	1	
C6008	ECUM1H220JCN	C. CAPACITOR CH 50V 22P	1	
C6009	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C6010	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C6011	ECUM1H392KBN	C. CAPACITOR CH 50V 3900P	1	
C6014	ECEA1HKA010	E. CAPACITOR 50V 1U	1	
C7501	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C7503	ECUM1H221JCN	C. CAPACITOR CH 50V 220P	1	
C7504	ECUM1H102JCN	C. CAPACITOR CH 50V 1000P	1	
C7507	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C7508	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C7509	ECEA1HKA100	E. CAPACITOR 50V 10U	1	
C7510	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C7511	ECUM1H200JCN	C. CAPACITOR CH 50V 20P	1	
C7513	ECUM1H270JCN	C. CAPACITOR CH 50V 27P	1	
C7514	ECUM1H220JCN	C. CAPACITOR CH 50V 22P	1	
C7515	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C7516	ECEA0JKA221	E. CAPACITOR 6.3V 220U	1	
C7517	EECS5R5T473	E. CAPACITOR 5.5V 0.047F	1	
C7520	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C7523	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C7525	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C7527-31	ECUM1H101JCN	C. CAPACITOR CH 50V 100P	5	
C7532	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C7533	ECUM1H101JCN	C. CAPACITOR CH 50V 100P	1	
C7534	ECUM1H200JCN	C. CAPACITOR CH 50V 20P	1	
C7535	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C7601	ECEA0JKA101	E. CAPACITOR 6.3V 100U	1	
C7604, 05	ECEA0JKA101	E. CAPACITOR 6.3V 100U	2	
C7606	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C7607	ECEA1CKA101	E. CAPACITOR 16V 100U	1	
C7609	ECEA1HKA100	E. CAPACITOR 50V 10U	1	
C7613	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C7701	ECUM1H150JCN	C. CAPACITOR CH 50V 15P	1	
C7702	ECUM1H080DCN	C. CAPACITOR CH 50V 8P	1	
C7708	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C7710	ECUM1H102JCN	C. CAPACITOR CH 50V 1000P	1	
C7712	ECQV1H104B46	P. CAPACITOR 50V 0.1U	1	
C7714	ECEA0JKA101	E. CAPACITOR 6.3V 100U	1	
C7716	ECUM1H120JCN	C. CAPACITOR CH 50V 12P	1	
C7717	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C7721	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C7722	ECEA1HKA2R2	E. CAPACITOR 50V 2.2U	1	
C7725	ECEA0JKA470	E. CAPACITOR 6.3V 47U	1	
C7726	VLQ0599J121	COIL 120UH	1	
C7728	ECUM1H102JCN	C. CAPACITOR CH 50V 1000P	1	
C7729	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C7731	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C7732	ECUM1H102JCN	C. CAPACITOR CH 50V 1000P	1	
C7735	ECUM1H391JCN	C. CAPACITOR CH 50V 390P	1	
C7737	ECUM1H102JCN	C. CAPACITOR CH 50V 1000P	1	
C7747	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C7752	ECUM1C224ZFN	C. CAPACITOR CH 16V 0.22U	1	
C7755, 56	ECUM1H102JCN	C. CAPACITOR CH 50V 1000P	2	
C7758	ECUM1H470JCN	C. CAPACITOR CH 50V 47P	1	
C7801, 02	ECUM1H221JCN	C. CAPACITOR CH 50V 220P	2	
C7803-06	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	4	
C7807	ECUX1H561JCN	C. CAPACITOR CH 50V 560P	1	
C7809-11	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	3	
D1002	MA4120-M	DIODE	1	
D1003	1SS254	DIODE	1	
D1011	MA4051-L	DIODE	1	
D1012	1SS254	DIODE	1	
D2001	MA151WA	DIODE	1	
D2005	1SS254	DIODE	1	
D2501, 02	MA185	DIODE	2	
D2504, 05	MA700	DIODE	2	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
D3003	1SS254	DIODE	1	
D3004	1SS355	DIODE	1	
D3005	MA151WA	DIODE	1	
D3008	MA151WK	DIODE	1	
D3009	1SS254	DIODE	1	
D3903	MA151K	DIODE	1	
D3908	MA4056-M	DIODE	1	
D3910	MA151K	DIODE	1	
D4002	MA151WK	DIODE	1	
D4003	1SS254	DIODE	1	
D6001	LN59LT.VT	LED	1	
D6002	1SS254	DIODE	1	
D6007	MA4075-L	DIODE	1	
D7501-03	1SS254	DIODE	3	
D7505-08	1SS254	DIODE	4	
D7510	1SS254	DIODE	1	
D7515	1SS254	DIODE	1	
D7519	MA723-VT	DIODE	1	
D7523	1SS254	DIODE	1	
D7529	1SS254	DIODE	1	
D7531	1SS254	DIODE	1	
D7532	MA4220-L	DIODE	1	
D7540, 41	1SS254	DIODE	2	
D7601	MA4300-M	DIODE	1	
D7603	MA151K	DIODE	1	
D7701	1SS254	DIODE	1	
D7801	1SS254	DIODE	1	
DP7501	VSL0470	DISPLAY TUBE	1	[SUPPLIED FROM MBV]
IC0701	LA7576	IC	1	
IC1001	UPC1093J	IC	1	
IC2001	BA6887-V3	IC	1	
IC2004	UPC358G2	IC	1	
IC2501	BA6871BS	IC	1	
IC2502	AN3814K	IC	1	
IC3001	TDA9725V2	IC	1	[SUPPLIED FROM MBV]
IC3003	TL8850AF	IC	1	
IC3901, 02	MC14052BD	IC	2	[SUPPLIED FROM MBV]
IC3903	MC14053BD	IC	1	[SUPPLIED FROM MBV]
IC3904	BU12101-06	IC	1	
IC4001	LA7285	IC	1	
IC6001	MN67434VRTB	IC	1	[SUPPLIED FROM MBV]
IC7501	M37507V6AJ	IC	1	[SUPPLIED FROM MBV]
IC7504	PST7023	IC	1	
IC7505	PST7043	IC	1	
IC7701	M27C1001BAAA	IC	1	[SUPPLIED FROM MBV]
IC7702	MC74HCT573AW	IC	1	[SUPPLIED FROM MBV]
IC7704	ST24W16FB6	IC	1	[SUPPLIED FROM MBV]
IC7705	BH7236AF	IC	1	[SUPPLIED FROM MBV]
IC7706	SABC513AL16P	IC	1	[SUPPLIED FROM MBV]
IC7708	SAA5281ZPM3	IC	1	
IC7801	MC74HCT74AD	IC	1	[SUPPLIED FROM MBV]
IR7501	PNA4611M02VT	PHOTO DIODE	1	[SUPPLIED FROM MBV]
JK3901	VJS3634	JACK	1	[SUPPLIED FROM MBV]
K0702, 03	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	2	
K0706	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
K1004	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
K3002	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
K3004	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
K3007, 08	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	2	
K3904	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
K3906	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
K3909	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
K3913	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
K3918	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
K3920	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
K6001	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
K7503	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
K7505	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
K7507	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
K7509	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
K7511	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
K7603	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
K7605	VLP0153	COIL	1	
K7608	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
K7705	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
K7801, 02	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	2	
K7804	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
L0701	VLQ0163JR15	COIL 0.15UH	1	
L0706	VLQEL05S8R2K	COIL 8.2UH	1	
L0707	ELJFA100KB	COIL 10UH	1	
L3008	VLQ0599J121	COIL 120UH	1	
L3009	VLQ0599J390	COIL 39UH	1	
L3013	VLQ0599J820	COIL 82UH	1	
L3014	VLQ0599J151	COIL 150UH	1	
L3015	VLQ0599J100	COIL 10UH	1	
L3016	VLQ0599J390	COIL 39UH	1	
L3017	ELESN391KA	INDUCTOR 390UH	1	
L3020	VLQ0599J470	COIL 47UH	1	
L3021	VLQ0599J270	COIL 27UH	1	
L3022	VLQ0599J100	COIL 10UH	1	
L3023, 24	VLQ0599J680	COIL 68UH	2	
L3025, 26	VLQ0599J390	COIL 39UH	2	
L3901	VLQ0599J101	COIL 100UH	1	
L3904	VLQ0599J101	COIL 100UH	1	
L3905	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
L4004	ELESN471KA	INDUCTOR 470UH	1	
L4005	VLQEL07R103J	COIL	1	[SUPPLIED FROM MBV]
L7601	VLQ0599J2R7	COIL 2.7UH	1	
L7602	VLQ0599J330	COIL 33UH	1	
L7603	VLQ0599J180	COIL 18UH	1	
L7604, 05	VLQ0599J680	COIL 68UH	2	
L7701	VLQ0599J390	COIL 39UH	1	
L7702	VLQ0599J3R3	COIL 3.3UH	1	
L7705	VLQ0599J120	COIL 12UH	1	
L7707	VLQ0599J560	COIL 56UH	1	
L7710	VLQ0599J100	COIL 10UH	1	
L7801	VLQ0599J150	COIL 15UH	1	
LB3001	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	1	
LB3002	ERJ6GMYG561	M.RESISTOR CH 1/10W 560	1	
LB3003	VLP0153	COIL	1	
LB3004-09	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	6	
LB4001, 02	ERJ6GMZ0R00	M.RESISTOR CH 1/10W 0	2	
P1001	VJS3631A015A	CONNECTOR (FEMALE) 15P	1	
P2001	VJS3640A002	CONNECTOR (FEMALE) 2P	1	
P2005	VJS3537A009G	CONNECTOR (FEMALE) 9P	1	
P2501	VJS3537A015G	CONNECTOR (FEMALE) 15P	1	
P2502	VJP3483	CONNECTOR (MALE) 3P	1	
P3001	VJS3537A011G	CONNECTOR (FEMALE) 11P	1	
P3902	VJP1231T	CONNECTOR (MALE) 4P	1	
P4001	VJP1229T	CONNECTOR (MALE) 2P	1	
P4002	VJS2329	CONNECTOR (FEMALE)	1	
P6004	VJS3821	CONNECTOR (FEMALE) 4P	1	
P7501	VJP3630A004G	CONNECTOR (MALE) 4P	1	[SUPPLIED FROM MBV]
PK0701	VJR0816E010W	CONNECTOR (MALE) 10P	1	
PP0701	VJP3589A004B	CONNECTOR (MALE) 4P	1	
Q0701	MSD601-S	TRANSISTOR	1	
Q1003	2SD1996	TRANSISTOR	1	
Q1004	2SD2544OPQA	TRANSISTOR	1	
Q1005	2SD1996	TRANSISTOR	1	
Q1007	2SB1321A	TRANSISTOR	1	
Q1008	2SD1991A	TRANSISTOR	1	
Q3001	MSB709	TRANSISTOR	1	
Q3002	MSD601	TRANSISTOR	1	
Q3003	MSB709-R	TRANSISTOR	1	
Q3006	MSB709	TRANSISTOR	1	
Q3008	MSD601	TRANSISTOR	1	
Q3010	MSD601	TRANSISTOR	1	
Q3015	MSC2295	TRANSISTOR	1	
Q3017	MSD601	TRANSISTOR	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
Q3019	MSC2295	TRANSISTOR	1	
Q3020	MSB709	TRANSISTOR	1	
Q3021	MSD601	TRANSISTOR	1	
Q3901, 02	MSD601	TRANSISTOR	2	
Q3903	MSD601-R	TRANSISTOR	1	
Q3904	MSB709	TRANSISTOR	1	
Q3909	MSD601	TRANSISTOR	1	
Q3910, 11	MSB709	TRANSISTOR	2	
Q3912	MSD601	TRANSISTOR	1	
Q3913	MSB709	TRANSISTOR	1	
Q3914	MSD601-R	TRANSISTOR	1	
Q3915	MSD601	TRANSISTOR	1	
Q3917	MSD601	TRANSISTOR	1	
Q4001	2SD602A-R	TRANSISTOR	1	
Q4002	2SB1320A-R	TRANSISTOR	1	
Q6001	MSB709	TRANSISTOR	1	
Q7602	MSD1328-S	TRANSISTOR	1	
Q7702	MSB709	TRANSISTOR	1	
Q7705	MSD601	TRANSISTOR	1	
Q7708	MSD601	TRANSISTOR	1	
Q7801-04	MSD601	TRANSISTOR	4	
QR1003	MUN2213	TRANSISTOR-RESISTOR	1	
QR2001	MUN2113	TRANSISTOR-RESISTOR	1	
QR2002	MUN2111	TRANSISTOR-RESISTOR	1	
QR2003	XN1213	TRANSISTOR-RESISTOR	1	
QR2004	MUN2112	TRANSISTOR-RESISTOR	1	
QR2014, 15	MUN2111	TRANSISTOR-RESISTOR	2	
QR3003	MUN2113	TRANSISTOR-RESISTOR	1	
QR3005	MUN2113	TRANSISTOR-RESISTOR	1	
QR3009	MUN2213	TRANSISTOR-RESISTOR	1	
QR3010	MUN2113	TRANSISTOR-RESISTOR	1	
QR3013	MUN2113	TRANSISTOR-RESISTOR	1	
QR3019	UN2210	TRANSISTOR-RESISTOR	1	
QR3901	UN2216	TRANSISTOR-RESISTOR	1	
QR3902	MUN2213	TRANSISTOR-RESISTOR	1	
QR3903	MUN2111	TRANSISTOR-RESISTOR	1	
QR3905	MUN2113	TRANSISTOR-RESISTOR	1	
QR3907	MUN2213	TRANSISTOR-RESISTOR	1	
QR4001	MUN2213	TRANSISTOR-RESISTOR	1	
QR6001	XN1211	TRANSISTOR-RESISTOR	1	
QR6003	MUN2211	TRANSISTOR-RESISTOR	1	
R0702	ERJ3GEYJ272	M. RESISTOR CH 1/16W 2.7K	1	
R0703	ERJ3GEYG152	M. RESISTOR CH 1/16W 1.5K	1	
R0704	ERJ3GEYJ222	M. RESISTOR CH 1/16W 2.2K	1	
R0705	ERJ3GEYJ562	M. RESISTOR CH 1/16W 5.6K	1	
R0706, 07	ERJ3GEYJ272	M. RESISTOR CH 1/16W 2.7K	2	
R0708	ERJ3GEYG152	M. RESISTOR CH 1/16W 1.5K	1	
R0709	ERJ3GEYJ105	M. RESISTOR CH 1/16W 1M	1	
R0710	ERJ6GEYG154	M. RESISTOR CH 1/10W 150K	1	
R0713	ERJ3GEYJ271	M. RESISTOR CH 1/16W 270	1	
R0714	ERJ3GEYJ470	M. RESISTOR CH 1/16W 47	1	
R0715	ERJ3GEYJ183	M. RESISTOR CH 1/16W 18K	1	
R0716	VRE0040E151	M. RESISTOR CH 1/10W 150	1	
R0717	ERJ3GEYJ330	M. RESISTOR CH 1/16W 33	1	
R0718	ERJ3GEYG102	M. RESISTOR CH 1/16W 1K	1	
R0719	ERJ6GEYF822	M. RESISTOR CH 1/10W 8.2K	1	
R0720	ERJ3GEYG102	M. RESISTOR CH 1/16W 1K	1	
R0721	ERJ3GEYJ331	M. RESISTOR CH 1/16W 330	1	
R0722	ERJ3GEYJ101	M. RESISTOR CH 1/16W 100	1	
R0723	ERJ3GEY0R00	M. RESISTOR CH 1/16W 0	1	
R0724	ERJ3GEYJ183	M. RESISTOR CH 1/16W 18K	1	
R0725	ERJ3GEYJ182	M. RESISTOR CH 1/16W 1.8K	1	
R0726	ERJ3GEYG561	M. RESISTOR CH 1/16W 560	1	[SUPPLIED FROM MBV]
R0727	ERJ3GEYG162	M. RESISTOR CH 1/16W 1.6K	1	[SUPPLIED FROM MBV]
R0732	ERJ3GEYG471	M. RESISTOR CH 1/16W 470	1	
R0783	ERJ3GEYJ393	M. RESISTOR CH 1/16W 39K	1	
R1001	ERDS1TJ392	C. RESISTOR 1/2W 3.9K	1	
R1006	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R1007	ERJ6GMYG272	M. RESISTOR CH 1/10W 2.7K	1	
R1008	ERJ6GMYG333	M. RESISTOR CH 1/10W 33K	1	
R1009	ERJ6GMYG272	M. RESISTOR CH 1/10W 2.7K	1	
R1012, 13	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	2	
R1014, 15	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	2	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R1016	ERJ6GMYJ223	M. RESISTOR CH 1/10W 22K	1	
R1017	ERDS2TJ122	C. RESISTOR 1/4W 1.2K	1	
R1022	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R2001	ERJ6GMYG512	M. RESISTOR CH 1/10W 5.1K	1	
R2002	ERJ6GMYG913	M. RESISTOR CH 1/10W 91K	1	
R2003	ERX1SJ1R8	M. RESISTOR 1W 1.8	1	
R2004	ERDS2TJ102	C. RESISTOR 1/4W 1K	1	
R2005, 06	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	2	
R2007	ERJ6GMYG563	M. RESISTOR CH 1/10W 56K	1	
R2009	ERJ6GMYG563	M. RESISTOR CH 1/10W 56K	1	
R2010	ERJ6GMYG203	M. RESISTOR CH 1/10W 20K	1	
R2012	ERJ6GMYG563	M. RESISTOR CH 1/10W 56K	1	
R2017	ERJ6GMYG822	M. RESISTOR CH 1/10W 8.2K	1	
R2019	ERDS2TJ561	C. RESISTOR 1/4W 560	1	
R2021	ERJ6GMYG104	M. RESISTOR CH 1/10W 100K	1	
R2023	ERJ6GMYG333	M. RESISTOR CH 1/10W 33K	1	
R2025	ERJ6GMYG682	M. RESISTOR CH 1/10W 6.8K	1	
R2027, 28	ERJ6GMYJ223	M. RESISTOR CH 1/10W 22K	2	
R2029	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R2037	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R2038	ERJ6GMYJ683	M. RESISTOR CH 1/10W 68K	1	
R2039	ERJ6GMYG101	M. RESISTOR CH 1/10W 100	1	
R2040	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R2041	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	1	
R2042, 43	ERJ6GMYJ223	M. RESISTOR CH 1/10W 22K	2	
R2044	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R2045	ERJ6GMYJ124	M. RESISTOR CH 1/10W 120K	1	
R2046	ERJ6GMYG204	M. RESISTOR CH 1/10W 200K	1	[SUPPLIED FROM MBV]
R2047	ERJ6GMYJ244	M. RESISTOR CH 1/10W 240K	1	
R2048	ERJ6GMYG184	M. RESISTOR CH 1/10W 180K	1	
R2049	ERJ6GMYG273	M. RESISTOR CH 1/10W 27K	1	
R2051	ERJ6GMYG392	M. RESISTOR CH 1/10W 3.9K	1	
R2052	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R2053	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	
R2057	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R2059	ERJ6GMYG272	M. RESISTOR CH 1/10W 2.7K	1	
R2061	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	1	
R2062, 63	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	2	
R2064	ERJ6GMYG154	M. RESISTOR CH 1/10W 150K	1	
R2501	ERJ6GMYG821	M. RESISTOR CH 1/10W 820	1	
R2502	ERJ6GMYG681	M. RESISTOR CH 1/10W 680	1	
R2503, 04	ERDS2TJ560	C. RESISTOR 1/4W 56	2	
R2505	ERDS1TJ561	C. RESISTOR 1/2W 560	1	
R2506	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	
R2507	ERJ6GMYG432	M. RESISTOR CH 1/10W 4.3K	1	
R2508	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	1	
R2509	ERJ6GMYJ684	M. RESISTOR CH 1/10W 680K	1	
R2510	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R2511	ERJ6GMYG133	M. RESISTOR CH 1/10W 13K	1	
R2512	ERJ6GMYJ105	M. RESISTOR CH 1/10W 1M	1	
R2513	ERJ6GMYG472	M. RESISTOR CH 1/10W 4.7K	1	
R2515	ERJ6GMYJ105	M. RESISTOR CH 1/10W 1M	1	
R2516	ERJ6GMYG392	M. RESISTOR CH 1/10W 3.9K	1	
R2519	ERDS2TJ560	C. RESISTOR 1/4W 56	1	
R2520	ERX12SJR47	M. RESISTOR 1/2W 0.47	1	
R2521, 22	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	2	
R2523	ERDS2TJ391	C. RESISTOR 1/4W 390	1	
R2524-26	ERDS2TJ330	C. RESISTOR 1/4W 33	3	
R2527	ERDS2FJ1R5	C. RESISTOR 1/4W 1.5	1	
R2528	ERDS2FJ1R2	C. RESISTOR 1/4W 1.2	1	
R2529	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R2531	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R2532	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R3004	ERJ6GMYG472	M. RESISTOR CH 1/10W 4.7K	1	
R3005	ERJ6GMYG152	M. RESISTOR CH 1/10W 1.5K	1	
R3006	ERJ6GMYG390	M. RESISTOR CH 1/10W 39	1	
R3010	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R3016	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R3018	ERJ6GMYJ120	M. RESISTOR CH 1/10W 12	1	
R3020	ERJ6GMYG821	M. RESISTOR CH 1/10W 820	1	
R3021	ERJ6GMYG183	M. RESISTOR CH 1/10W 18K	1	
R3022	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R3023, 24	ERJ6GMYG472	M. RESISTOR CH 1/10W 4.7K	2	
R3025	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	1	
R3026	ERJ6GMYG152	M. RESISTOR CH 1/10W 1.5K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R3027	ERJ6GMYG331	M. RESISTOR CH 1/10W 330	1	
R3028	ERJ6GMYG271	M. RESISTOR CH 1/10W 270	1	
R3029	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R3030	ERJ6GMYG101	M. RESISTOR CH 1/10W 100	1	
R3031	ERJ6GMYG472	M. RESISTOR CH 1/10W 4.7K	1	
R3034	ERJ6GMYG682	M. RESISTOR CH 1/10W 6.8K	1	
R3035	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	1	
R3037	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R3038	ERJ6GMYG104	M. RESISTOR CH 1/10W 100K	1	
R3039	ERJ6GMYG122	M. RESISTOR CH 1/10W 1.2K	1	
R3045	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R3046-48	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	3	
R3051	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R3052	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R3053	ERJ6GMYG681	M. RESISTOR CH 1/10W 680	1	
R3054	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	
R3055, 56	ERJ6GMYG202	M. RESISTOR CH 1/10W 2K	2	
R3058	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R3059	ERJ6GMYJ683	M. RESISTOR CH 1/10W 68K	1	
R3060	ERJ6GMYJ223	M. RESISTOR CH 1/10W 22K	1	
R3061, 62	ERJ6GMYG122	M. RESISTOR CH 1/10W 1.2K	2	
R3063, 64	ERJ6GMYG561	M. RESISTOR CH 1/10W 560	2	
R3066	ERJ6GMYG393	M. RESISTOR CH 1/10W 39K	1	
R3068	ERJ6GMYG152	M. RESISTOR CH 1/10W 1.5K	1	
R3074	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	1	
R3076	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	1	
R3081, 82	ERJ6GMYG561	M. RESISTOR CH 1/10W 560	2	
R3085	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R3086	ERJ6GMYG182	M. RESISTOR CH 1/10W 1.8K	1	
R3087	ERJ6GMYG272	M. RESISTOR CH 1/10W 2.7K	1	
R3089	ERJ6GMYG681	M. RESISTOR CH 1/10W 680	1	
R3090, 91	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	2	
R3093	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R3094	ERJ6GMYG821	M. RESISTOR CH 1/10W 820	1	
R3095	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	1	
R3096	ERJ6GMYG331	M. RESISTOR CH 1/10W 330	1	
R3097	ERJ6GMYG821	M. RESISTOR CH 1/10W 820	1	
R3098	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	1	
R3099	ERJ6GMYG471	M. RESISTOR CH 1/10W 470	1	
R3101	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	1	
R3103	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	
R3901	ERJ6GMYG154	M. RESISTOR CH 1/10W 150K	1	
R3902, 03	ERJ6GMYG562	M. RESISTOR CH 1/10W 5.6K	2	
R3904	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R3905	ERJ6GMYG101	M. RESISTOR CH 1/10W 100	1	
R3906	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	1	
R3907	ERJ6GMYG154	M. RESISTOR CH 1/10W 150K	1	
R3908, 09	ERJ6GMYG562	M. RESISTOR CH 1/10W 5.6K	2	
R3910	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R3911	ERJ6GMYG101	M. RESISTOR CH 1/10W 100	1	
R3912	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	1	
R3913	ERDS2TJ750	C. RESISTOR 1/4W 75	1	
R3914	ERJ6GMYJ680	M. RESISTOR CH 1/10W 68	1	
R3915	ERDS2TJ750	C. RESISTOR 1/4W 75	1	
R3916	ERJ6GMYJ680	M. RESISTOR CH 1/10W 68	1	
R3917	ERJ6GMYJ683	M. RESISTOR CH 1/10W 68K	1	
R3918	ERJ6GMYG331	M. RESISTOR CH 1/10W 330	1	
R3919	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	1	
R3920, 21	ERJ6GMYG121	M. RESISTOR CH 1/10W 120	2	
R3924	ERJ6GMYJ911	M. RESISTOR CH 1/10W 910	1	
R3931	ERJ6GMYJ683	M. RESISTOR CH 1/10W 68K	1	
R3932	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	1	
R3933	ERJ6GMYG331	M. RESISTOR CH 1/10W 330	1	
R3934, 35	ERJ6GMYG121	M. RESISTOR CH 1/10W 120	2	
R3936	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R3937	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R3938, 39	ERJ6GMYG104	M. RESISTOR CH 1/10W 100K	2	
R3941	ERJ6GMYJ112	M. RESISTOR CH 1/10W 1.1K	1	
R3942	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R3943	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	
R3944	ERJ6GMYG272	M. RESISTOR CH 1/10W 2.7K	1	
R3945	ERJ6GMYG104	M. RESISTOR CH 1/10W 100K	1	
R3948	ERJ6GMYG393	M. RESISTOR CH 1/10W 39K	1	
R3949	ERJ6GMYG681	M. RESISTOR CH 1/10W 680	1	
R3950	ERJ6GMYG623	M. RESISTOR CH 1/10W 62K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R3951	ERJ6GMYJ223	M. RESISTOR CH 1/10W 22K	1	
R3952	ERJ6GMYG153	M. RESISTOR CH 1/10W 15K	1	
R3953	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R3954, 55	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	2	
R3956	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R3957	ERJ6GMYG104	M. RESISTOR CH 1/10W 100K	1	
R3958	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R3959	ERJ6GMYG104	M. RESISTOR CH 1/10W 100K	1	
R3960	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R3961	ERDS2TJ392	C. RESISTOR 1/4W 3.9K	1	
R3965	ERJ6GMYG392	M. RESISTOR CH 1/10W 3.9K	1	
R3966	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	
R3967	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R3968	ERJ6GMYG123	M. RESISTOR CH 1/10W 12K	1	
R3972, 73	ERJ6GMYG101	M. RESISTOR CH 1/10W 100	2	
R3976	ERJ6GMYG334	M. RESISTOR CH 1/10W 330K	1	
R3977	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R3978	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	1	
R4001	ERJ6GMYG333	M. RESISTOR CH 1/10W 33K	1	
R4002	ERJ6GMYJ394	M. RESISTOR CH 1/10W 390K	1	
R4003	ERJ6GMYG101	M. RESISTOR CH 1/10W 100	1	
R4004	ERJ6GMYG682	M. RESISTOR CH 1/10W 6.8K	1	
R4005	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	
R4007	ERJ6GMYG822	M. RESISTOR CH 1/10W 8.2K	1	
R4008	ERJ6GMYJ824	M. RESISTOR CH 1/10W 820K	1	
R4009	ERJ6GMYJ513	M. RESISTOR CH 1/10W 51K	1	
R4010	ERJ6GMYG272	M. RESISTOR CH 1/10W 2.7K	1	
R4011	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	1	
R4012	ERJ6GMYG243	M. RESISTOR CH 1/10W 24K	1	
R4013	ERJ6GMYG183	M. RESISTOR CH 1/10W 18K	1	
R4017	ERJ6GMYG100	M. RESISTOR CH 1/10W 10	1	
R4018	ERJ6GMYG333	M. RESISTOR CH 1/10W 33K	1	
R4019	ERJ6GMYG153	M. RESISTOR CH 1/10W 15K	1	
R4020	ERJ6GMYG123	M. RESISTOR CH 1/10W 12K	1	
R4021	ERJ6GMYG682	M. RESISTOR CH 1/10W 6.8K	1	
R4022	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	1	
R4023	ERJ6GMYG562	M. RESISTOR CH 1/10W 5.6K	1	
R4024	ERJ6GMYG203	M. RESISTOR CH 1/10W 20K	1	
R4025	ERJ6GMYG562	M. RESISTOR CH 1/10W 5.6K	1	
R4026	ERJ6GMYG101	M. RESISTOR CH 1/10W 100	1	
R4028	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R4031	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R4032	ERJ6GMYG153	M. RESISTOR CH 1/10W 15K	1	
R4034	ERJ6GMYG331	M. RESISTOR CH 1/10W 330	1	
R4036	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	1	
R4037	ERJ6GMYG470	M. RESISTOR CH 1/10W 47	1	
R6001	ERJ6GMYJ201	M. RESISTOR CH 1/10W 200	1	
R6002, 03	ERJ6GMYG272	M. RESISTOR CH 1/10W 2.7K	2	
R6004	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R6005-07	ERJ6GMYG333	M. RESISTOR CH 1/10W 33K	3	
R6008	ERJ6GMYG272	M. RESISTOR CH 1/10W 2.7K	1	
R6009-11	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	3	
R6012	ERJ6GMYG104	M. RESISTOR CH 1/10W 100K	1	
R6013	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R6014, 15	ERJ6GMYG223	M. RESISTOR CH 1/10W 22K	2	
R6016	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R6017	ERJ6GMYG271	M. RESISTOR CH 1/10W 270	1	
R6018	ERJ6GMYJ683	M. RESISTOR CH 1/10W 68K	1	
R6020	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	
R6022	ERJ6GMYG101	M. RESISTOR CH 1/10W 100	1	
R6023	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R6024-28	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	5	
R6030	ERJ6GMYG224	M. RESISTOR CH 1/10W 220K	1	
R6032, 33	ERJ6GMYG272	M. RESISTOR CH 1/10W 2.7K	2	
R6034, 35	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	2	
R6037	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R7501-03	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	3	
R7504	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R7505-09	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	5	
R7510	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	1	
R7514	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	1	
R7515	ERDS2TJ470	C. RESISTOR 1/4W 47	1	
R7516	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R7518	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	1	
R7519	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R7520, 21	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	2	
R7533	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R7535	ERJ6GMYG132	M. RESISTOR CH 1/10W 1.3K	1	
R7536	ERJ6GMYJ180	M. RESISTOR CH 1/10W 18	1	
R7539	ERJ6GMYG101	M. RESISTOR CH 1/10W 100	1	
R7540	ERJ6GMYG331	M. RESISTOR CH 1/10W 330	1	
R7542	ERJ6GMYG224	M. RESISTOR CH 1/10W 220K	1	
R7545	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R7546	ERJ6GMYJ181	M. RESISTOR CH 1/10W 180	1	
R7551	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R7554	ERJ6GMYJ150	M. RESISTOR CH 1/10W 15	1	
R7555	ERJ6GMYG132	M. RESISTOR CH 1/10W 1.3K	1	
R7556	ECUM1H101JCN	C. CAPACITOR CH 50V 100P	1	
R7560	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R7561	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R7603	VLP0153	COIL	1	
R7604, 05	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	2	
R7606	ERG2SJ331	M. RESISTOR 2W 330	1	
R7607, 08	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	2	
R7609	ERJ6GMYG333	M. RESISTOR CH 1/10W 33K	1	
R7610	ERJ6GMYG472	M. RESISTOR CH 1/10W 4.7K	1	
R7611	ERJ6GMYJ683	M. RESISTOR CH 1/10W 68K	1	
R7612, 13	ERJ6GMYG151	M. RESISTOR CH 1/10W 150	2	
R7614	ERJ6GMYJ683	M. RESISTOR CH 1/10W 68K	1	
R7622	ERG2SJ331	M. RESISTOR 2W 330	1	
R7626	VLP0153	COIL	1	
R7627	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	
R7704	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R7705	ERJ6GMYG222	M. RESISTOR CH 1/10W 2.2K	1	
R7706	ECUM1H180JCN	C. CAPACITOR CH 50V 18P	1	
R7708	ERJ6GMYJ621	M. RESISTOR CH 1/10W 620	1	
R7709	ERJ6GMYG472	M. RESISTOR CH 1/10W 4.7K	1	
R7711	ERJ6GMYG122	M. RESISTOR CH 1/10W 1.2K	1	
R7712, 13	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	2	
R7723	ERJ6GMYG472	M. RESISTOR CH 1/10W 4.7K	1	
R7724	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R7725	ERJ6GMYG332	M. RESISTOR CH 1/10W 3.3K	1	
R7726	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R7727-29	ERJ6GMYG101	M. RESISTOR CH 1/10W 100	3	
R7730	ERJ6GMYG224	M. RESISTOR CH 1/10W 220K	1	
R7736	ERJ6GMYG472	M. RESISTOR CH 1/10W 4.7K	1	
R7737, 38	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	2	
R7746	ERJ6GMYG182	M. RESISTOR CH 1/10W 1.8K	1	
R7750	ERJ6GMYJ621	M. RESISTOR CH 1/10W 620	1	
R7751	ERJ6GMYG392	M. RESISTOR CH 1/10W 3.9K	1	
R7752	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R7758	ERJ6GMYG273	M. RESISTOR CH 1/10W 27K	1	
R7761	ECUM1H470JCN	C. CAPACITOR CH 50V 47P	1	
R7767	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R7772	ERJ6GMYG472	M. RESISTOR CH 1/10W 4.7K	1	
R7773, 74	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	2	
R7781-83	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	3	
R7784	ERJ6GMYG154	M. RESISTOR CH 1/10W 150K	1	
R7788	ERJ6GMYJ391	M. RESISTOR CH 1/10W 390	1	
R7789	ERJ6GMYG122	M. RESISTOR CH 1/10W 1.2K	1	
R7790	ERJ6GMYG821	M. RESISTOR CH 1/10W 820	1	
R7791	ERJ6GMYG182	M. RESISTOR CH 1/10W 1.8K	1	
R7801-26	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	26	
R7828	ERJ6GMYG104	M. RESISTOR CH 1/10W 100K	1	
R7829	ERJ6GMYG273	M. RESISTOR CH 1/10W 27K	1	
R7830	ERJ6GMYG224	M. RESISTOR CH 1/10W 220K	1	
R7831	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	1	
R7832	ERJ6GMYJ223	M. RESISTOR CH 1/10W 22K	1	
R7833	ERJ6GMYG104	M. RESISTOR CH 1/10W 100K	1	
R7834	ERJ6GMYG473	M. RESISTOR CH 1/10W 47K	1	
R7835	ERJ6GMYG472	M. RESISTOR CH 1/10W 4.7K	1	
R7837	ERJ6GMYK225	M. RESISTOR CH 1/10W 2.2M	1	
R7838	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
R7839	ERJ6GMYG271	M. RESISTOR CH 1/10W 270	1	
R7840	ERJ6GMYJ105	M. RESISTOR CH 1/10W 1M	1	
R7841	ERJ6GMYG153	M. RESISTOR CH 1/10W 15K	1	
R7844, 45	VLP0153	COIL	2	
R7850	ERJ6GMYJ221	M. RESISTOR CH 1/10W 220	1	
S1501	VESO709	SWITCH	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
S7503	EVQ11G07K	SWITCH	1	
S7506	EVQ11G07K	SWITCH	1	
S7512, 13	EVQ11G07K	SWITCH	2	
SN6001, 02	PN205LT-NCVT	PHOTO TRANSISTOR	2	
SN6003, 04	ON1387	PHOTO INTERRUPTER	2	
T0703	EQV5EC071A	TRANSFORMER	1	
T0704	EQV5EC072A	TRANSFORMER	1	
T0711	EQS5EC032A	TRANSFORMER	1	
T4001	EIQ7QF014Q	TRANSFORMER	1	
⚠ TU7601	ENG47258G1	TUNER	1	
VR0701	EVNCBAA00B24	V. RESISTOR 20K	1	
VR2001	EVNCYAA03B54	V. RESISTOR 50K	1	
VR4001	EVNCYAA03B15	V. RESISTOR 100K	1	
VR5501	EVNCYAA03B23	V. RESISTOR 2K	1	
X0701	VLF1180	FILTER	1	
X0702	VLF1291	FILTER	1	[SUPPLIED FROM MBV]
X0703	EFCWS2F14	FILTER	1	[SUPPLIED FROM MBV]
X0704	VLF1166	FILTER	1	[SUPPLIED FROM MBV]
X3001	VSX0162	CRYSTAL OSCILLATOR	1	
X6001	VSX0479	CRYSTAL OSCILLATOR	1	
X7501	VSX0608	CRYSTAL OSCILLATOR	1	
X7502	VSX0094	CRYSTAL OSCILLATOR	1	
X7702	VSX0353	CRYSTAL OSCILLATOR	1	
ZB6001, 02	VMD2329	PHOTO TRANSISTOR HOLDER	2	
ZB6003	VMD2328	REEL GUIDE	1	
ZB6004	VMD2330	LED HOLDER	1	
ZB7501	VXQ0424	FIP HOLDER	1	
		MISCELLANEOUS		
	VMX2233	PCB SPACER	3	
	VMP4471	TV DEMODULATOR ANGLE	1	FOR TV DEMODU. C.B.A.
■	VEP05360C	HEAD AMP C.B.A.		[SUPPLIED FROM MBV]
				(RTL)
C501	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C502	ECEA0JKA101	E. CAPACITOR 6.3V 100U	1	
C503	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C506, 07	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	2	
C509, 10	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	2	
C512	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C513	ECUM1H560JCN	C. CAPACITOR CH 50V 56P	1	
C514	ECUM1H080DCN	C. CAPACITOR CH 50V 8P	1	
C515	ECUM1H330JCN	C. CAPACITOR CH 50V 33P	1	
C516	ECUM1H681JCN	C. CAPACITOR CH 50V 680P	1	
C518	ECUM1H220JCN	C. CAPACITOR CH 50V 22P	1	
C519	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
C520	ECUM1H121JCN	C. CAPACITOR CH 50V 120P	1	
C521	ECUM1H270JCN	C. CAPACITOR CH 50V 27P	1	
C523	ECUM1H221JCN	C. CAPACITOR CH 50V 220P	1	
C524	ECUM1H104ZFN	C. CAPACITOR CH 50V 0.1U	1	
C525	ECUM1H103ZFN	C. CAPACITOR CH 50V 0.01U	1	
IC501	STV5742	IC	1	[SUPPLIED FROM MBV]
K502, 03	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	2	
K510	ERJ6GMZOR00	M. RESISTOR CH 1/10W 0	1	
K511	ERJ6GEYOR00	M. RESISTOR CH 1/10W 0	1	
L501	VLQ0599J101	COIL 100UH	1	
L502	ELESE6R8JA	INDUCTOR 6.8UH	1	
L503	ELESE120KA	INDUCTOR 12UH	1	
L504	ELESE101KA	INDUCTOR 100UH	1	
L505	ELESE270KA	INDUCTOR 27UH	1	
L506	VLQ0599J101	COIL 100UH	1	
P501	VJS3537B011G	CONNECTOR (FEMALE) 11P	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
PS502	VJS3069T	CONNECTOR (FEMALE) 8P	1	
Q501	MSC2295	TRANSISTOR	1	
Q502	MSB709	TRANSISTOR	1	
Q504	MSC2295	TRANSISTOR	1	
R501	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R502	ERJ6GEYG273	M. RESISTOR CH 1/10W 27K	1	
R504	ERJ6GMYJ391	M. RESISTOR CH 1/10W 390	1	
R505	ERJ6GMYG100	M. RESISTOR CH 1/10W 10	1	
R507	ERJ6GMYG561	M. RESISTOR CH 1/10W 560	1	
R509	ERJ6GMYJ391	M. RESISTOR CH 1/10W 390	1	
R510	ERJ6GMYG102	M. RESISTOR CH 1/10W 1K	1	
R511	ERJ6GMYG821	M. RESISTOR CH 1/10W 820	1	
R512	ERJ6GMYJ223	M. RESISTOR CH 1/10W 22K	1	
R513	ERJ6GMYJ361	M. RESISTOR CH 1/10W 360	1	
R514	ERJ6GMYG471	M. RESISTOR CH 1/10W 470	1	
R515	ERJ6GMYG821	M. RESISTOR CH 1/10W 820	1	
R516	ERJ6GMYJ223	M. RESISTOR CH 1/10W 22K	1	
R521	ERJ6GMYG561	M. RESISTOR CH 1/10W 560	1	
R522	ERJ6GMYG103	M. RESISTOR CH 1/10W 10K	1	
R523	ERJ6GMYG151	M. RESISTOR CH 1/10W 150	1	
VR3012	EVND1AA00B52	V. RESISTOR 500	1	
ZA501	VSC4206	H. A SHIELD COVER (A)	1	[SUPPLIED FROM MBV]
ZA502	VSC4207	H. A SHIELD COVER (B)	1	[SUPPLIED FROM MBV]
■	VEP06A20E	OPERATION (R) C. B. A.		[SUPPLIED FROM MBV]
				(RTL)
P6601	VJS3630B004B	CONNECTOR (FEMALE) 4P	1	[SUPPLIED FROM MBV]
S6613-16	EVQ21405R	SWITCH	4	
■	VEP06C00G	AV FRONT C. B. A.		[SUPPLIED FROM MBV]
				(RTL)
C6503	ECEA1CKA470	E. CAPACITOR 16V 47U	1	
D6501-03	SLR932AVA	DIODE	3	[SUPPLIED FROM MBV]
L6501	VLQ0599J221	COIL 220UH	1	[SUPPLIED FROM MBV]
P6501	VJP1244T	CONNECTOR (MALE) 4P	1	
PS6501	VJS3630B004B	CONNECTOR (FEMALE) 4P	1	[SUPPLIED FROM MBV]
Q6501	2SB1320A	TRANSISTOR	1	
Q6502	2SD1992A	TRANSISTOR	1	
R6504	ERDS2TJ150	C. RESISTOR 1/4W 15	1	
R6505	ERDS2TJ221	C. RESISTOR 1/4W 220	1	
R6506, 07	ERDS2TJ332	C. RESISTOR 1/4W 3.3K	2	
S6501-03	EVQ11G07K	SWITCH	3	
ZB6501, 02	VMD0504	LED HOLDER	2	
ZB6503	VMD2591	LED HOLDER	1	[SUPPLIED FROM MBV]
⚠ ■	VEP01621J	SWITCH POWER C. B. A.		[SUPPLIED FROM MBV]
				(RTL)
⚠ C1101	ECKMWS102MEF	C. CAPACITOR 1000P	1	
⚠ C1104	ECKMWS102MEF	C. CAPACITOR 1000P	1	
⚠ C1107	ECKMWS102MEF	C. CAPACITOR 1000P	1	
⚠ C1110, 11	VCF2AAF104M	P. CAPACITOR 100V 0.1U	2	[SUPPLIED FROM MBV]
C1112	ECEC2GG330	E. CAPACITOR 400V 33U	1	
C1113	ECKD2H103PU	C. CAPACITOR 500V 0.01U	1	
C1114	ECCD3A470KGE	C. CAPACITOR 1KV 47P	1	[SUPPLIED FROM MBV]
C1115	ECA1VGE470X	E. CAPACITOR 35V 47U	1	[SUPPLIED FROM MBV]
C1116	ECEA1HGE470	E. CAPACITOR 50V 47U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C1117	VCF1JAH104	P. CAPACITOR 63V 0.1U	1	[SUPPLIED FROM MBV]
C1118	ECKF1H102KB	C. CAPACITOR 50V 1000P	1	
C1120	ECQB1H332JF	P. CAPACITOR 50V 3300P	1	
C1121	ECKF1H391KB	C. CAPACITOR 50V 390P	1	
C1131	EEUFA1E331	E. CAPACITOR 25V 330U	1	
C1132	ECEA1DFZ331	E. CAPACITOR 20V 330U	1	
C1133	ECKD2H101KB	C. CAPACITOR 500V 100P	1	
C1134	EEUFA1A681	E. CAPACITOR 10V 680U	1	[SUPPLIED FROM MBV]
C1135	ECA1AFZ331	E. CAPACITOR 10V 330U	1	
C1137	ECEA1JFE470	E. CAPACITOR 63V 47U	1	
C1138	ECKF1H103ZF	C. CAPACITOR 50V 0.01U	1	
C1139	ECKD2H101KB	C. CAPACITOR 500V 100P	1	
C1140	ECEA1VFE820	E. CAPACITOR 35V 82U	1	
C1141	ECKF1H103ZF	C. CAPACITOR 50V 0.01U	1	
C1143	ECA1AFZ331	E. CAPACITOR 10V 330U	1	
C1144, 45	ECKF1H103ZF	C. CAPACITOR 50V 0.01U	2	
C1147	ECKF1H471KB	C. CAPACITOR 50V 470P	1	
C1148	VCF1JAH104	P. CAPACITOR 63V 0.1U	1	[SUPPLIED FROM MBV]
C1150	ECQB1H472JF	P. CAPACITOR 50V 4700P	1	
⚠ D1102	S1WBA60S	DIODE	1	
D1103	AP01G	DIODE	1	
D1104	MA178	DIODE	1	
D1105	MA4082M	DIODE	1	
D1108	RD100E	DIODE	1	
D1110	ERDS2FJ273	C. RESISTOR 1/4W 27K	1	[SUPPLIED FROM MBV]
D1121	RL2ZP	DIODE	1	
D1122	AK04	IC	1	
D1123	ERA22-02	DIODE	1	
D1124	MA185	DIODE	1	
D1125	AK04	IC	1	
D1126	MA4043-L	DIODE	1	
D1127	1SS254	DIODE	1	
IC1101	TDA4605-3	IC	1	
⚠ L1107, 08	ELF18D290A	COIL 29UH	2	
L1109	VLP0074	COIL	1	
L1110	VLP0085	COIL	1	
L1121	VLQ0611K220	COIL 22UH	1	
L1122	ELELN220KA	INDUCTOR 22UH	1	[SUPPLIED FROM MBV]
L1123, 24	ELESE101KA	INDUCTOR 100UH	2	
⚠ P1101	VJS3306	AC INLET	1	
P1102	VJP3630A004G	CONNECTOR (MALE) 4P	1	[SUPPLIED FROM MBV]
P1103	VJP3631A015W	CONNECTOR (MALE) 15P	1	
⚠ PR1101	VSF0232E16	IC PROTECTOR	1	[SUPPLIED FROM MBV]
⚠ Q1101	STP3N60FI-M	TRANSISTOR	1	
Q1102	2SD1991A	TRANSISTOR	1	
Q1105	2SD1991A	TRANSISTOR	1	
⚠ Q1111	GNX82A5387	PHOTO COUPLER	1	[SUPPLIED FROM MBV]
QR1101	UN6114	TRANSISTOR-RESISTOR	1	
R1101	ERDS2FJ273	C. RESISTOR 1/4W 27K	1	[SUPPLIED FROM MBV]
R1102, 03	ERG1SJ183	M. RESISTOR 1W 18K	2	[SUPPLIED FROM MBV]
R1104	ERDS2TJ391	C. RESISTOR 1/4W 390	1	
R1106	ERDS2FJ221	C. RESISTOR 1/4W 220	1	
R1107	ERDS2FJ164	C. RESISTOR 1/4W 160K	1	[SUPPLIED FROM MBV]
R1108	ERDS2FJ105	C. RESISTOR 1/4W 1M	1	
R1109	ERDS2FJ221	C. RESISTOR 1/4W 220	1	
R1110	ERDS2FJ362	C. RESISTOR 1/4W 3.6K	1	[SUPPLIED FROM MBV]
R1111	ERDS2FJ222	C. RESISTOR 1/4W 2.2K	1	
R1112	ERDS2FJ304	C. RESISTOR 1/4W 300K	1	[SUPPLIED FROM MBV]
R1113	ERDS2FJ434	C. RESISTOR 1/4W 430K	1	[SUPPLIED FROM MBV]
R1114	ERX12SJR51	M. RESISTOR 1/2W 0.51	1	
R1115	ERDS2FJ103	C. RESISTOR 1/4W 10K	1	
R1116	ERDS2FJ100	C. RESISTOR 1/4W 10	1	
R1117	ERDS2FJ472	C. RESISTOR 1/4W 4.7K	1	
R1118	ERG1SJ100	M. RESISTOR 1W 10	1	
⚠ R1122	ERG12AGM334	S. RESISTOR 1/2W 330K	1	
R1125	ERDS2TJ271	C. RESISTOR 1/4W 270	1	
R1127	ERDS2FJ333	C. RESISTOR 1/4W 33K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R1128	ERDS2FJ332	C. RESISTOR 1/4W 3.3K	1	
R1129	ERDS2FJ223	C. RESISTOR 1/4W 22K	1	[SUPPLIED FROM MBV]
R1133	ERDS2FJ394	C. RESISTOR 1/4W 390K	1	[SUPPLIED FROM MBV]
R1134	ERDS2FJ273	C. RESISTOR 1/4W 27K	1	[SUPPLIED FROM MBV]
R1135	ERDS2FJ274	C. RESISTOR 1/4W 270K	1	[SUPPLIED FROM MBV]
⚠ T1101	VLT0740	POWER TRANSFORMER	1	
		MISCELLANEOUS		
⚠	EYF52BC	FUSE HOLDER	2	
■	----------	CYLINDER STATOR C. B. A.		
		MISCELLANEOUS		
	HW-300A-CF	HALL IC	1	
	VJS3537B009G	CONNECTOR (FEMALE) 9P	1	
■	----------	MOTOR C. B. A.		
		MISCELLANEOUS		
	VJP3316B002	CONNECTOR (MALE) 2P	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks

MEMO

INTERNAL REFERENCE CODES

NOTE: This chart is only for internal reference.
Do not order any parts according to these codes.

P. C. B.	FILM CODE
MAIN	FUAI00–06B99
HEAD AMP	FUAI00–05360
POWER	FUAI01–01621
OPERATION	FUAI00–06A20
VIF PACK	FUAI00–07801
AV FRONT	FUAI00–06C00

1018

Panasonic

Printed in Germany

ORDER NO. VSD9402M632

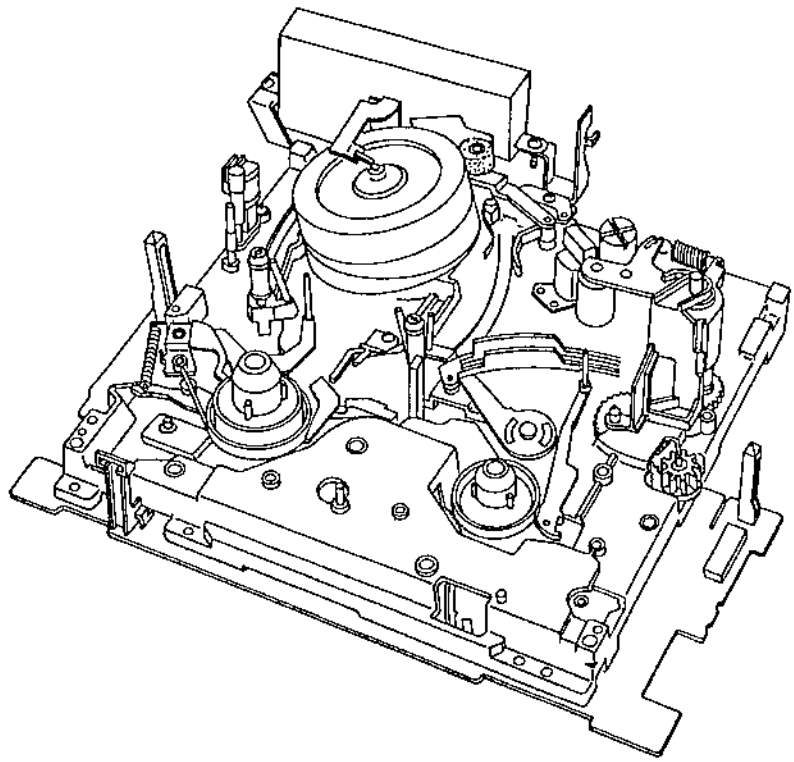
Service Manual

Sec. 1 General Information
Sec. 2 Maintenance Procedures
Sec. 3 Mechanical Adjustment Procedur
Sec. 4 Assembly & Phase Adjustment Procedure

Video Cassette Recorder

VHS
PAL

K-MECHANISM



IMPORTANT

The **K-MECHANISM** chassis are built in several Panasonic SVHS/VHS Video Cassette Recorder.

Thus, Properly file this service manual with the service manual of the relative video cassette recorder.

Panasonic

INTRODUCTION

This Service Manual contains the technical information which service personnel to understand and service the K-Mechanism.
The Maintenance Chart, Mechanical Parts List and Mechanical Specification, please refer to the service manual of each model.

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SECTION 1
GENERAL INFORMATION

The K mechanism maintains the same high performance as G2 mechanism but with a smaller quantity of mounted parts, 40% less than G2 mechanism.

1-1. FEATURE of K MECHANISM

1-1-1. Parts Reduction

<K Mechanism>

a. Reduction in the number of drive parts through the use of a single motor to perform front loading and unit loading.
b. Direct drive of brakes and loading gears with the multi-function main lever.
c. Elimination of sub lever and solenoids.

<Front Loading Unit>

a. Elimination of a slide switch, to reduce wiring.
b. Elimination or combining the joint parts.
c. Smaller and thinner the top plate and rack parts.

1-1-2. No Adjustment of the following is required.

a. Take-up inclined position.
b. P5 Post height.

1-1-3. Reduced Gear Phase Position Alignments

The K Mechanism has only 6 gear phase alignment positions and G2 mechanism has 12 gear phase alignment positions.

1-2. OPERATION of K-MECHANISM

The K mechanism has two motors, the loading motor and capstan motor. The loading motor operates the front loading/unloading and tape loading/unloading. The capstan motor operates each mode.
The bottom C.B.A. connects the mechanism to the system control circuit. On the bottom C.B.A. there are take-up and supply photo-sensors, Sensor LED, Mode Switch Connector, Safety Tab Switch, Supply and Take-up Reel Sensors and Loading Motor Connector. All sensor information sent to the system control circuit.

1-3. EMERGENCY CASSETTE REMOVAL

If the electrical circuit is defective and the action of unloading and front unloading do not work properly, it is possible to removing cassette manually.
There are 2 methods of removing the cassette.

A. Battery Operation

1. Remove the bottom plate.
2. Connect the battery (Manganese-Type (AA)(R6) 3pcs./+4.5V) to P1503 as shown in Fig.G1.
3. After moving the loading post to the unloaded position, disconnect the battery to stop the loading motor.
4. Turn the capstan rotor clockwise to take up the tape.
5. Reconnect the battery to eject the cassette.

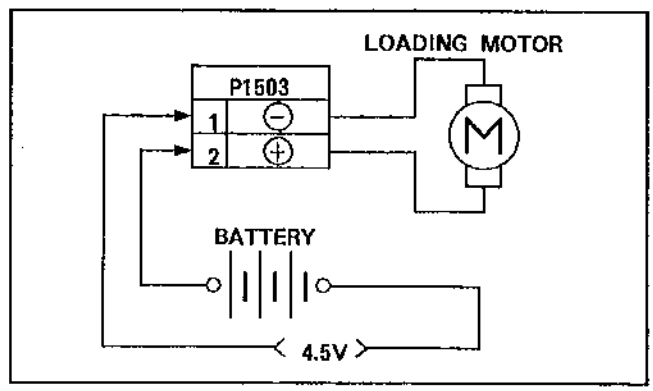


Fig.G1

B. Hand Operation

1. Remove the bottom plate.
2. Turn the worm gear to arrow mark direction (A) by finger as shown in Fig.G2 until loading post move to unloading position.
3. Turn the capstan rotor clockwise (B) to take up the tape.
4. Turn the worm gear again to eject the cassette.

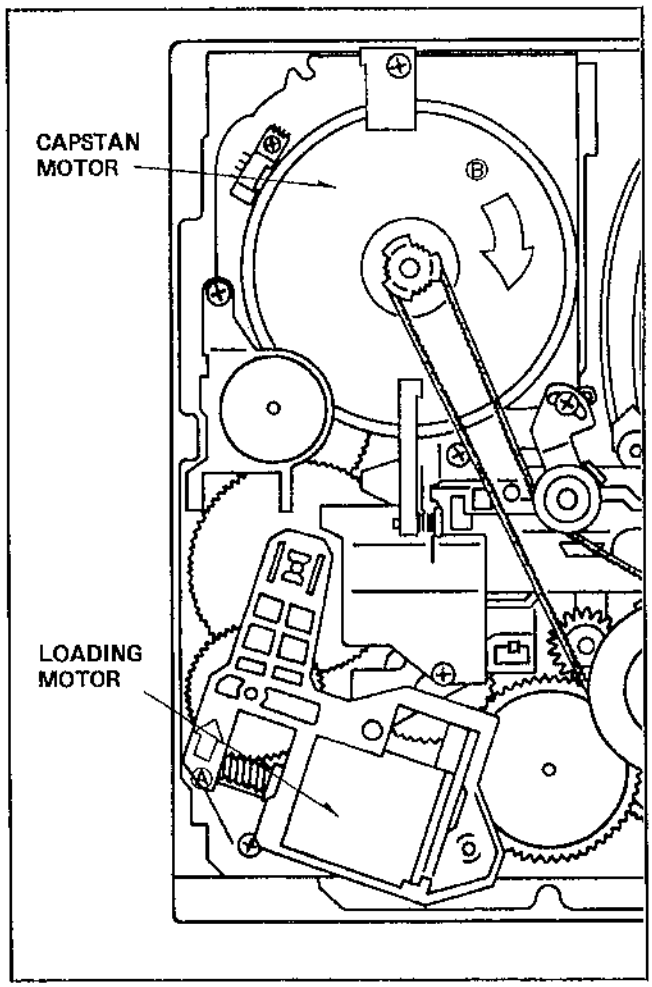


Fig.G2

1-4. EJECT OPERATION

The main cam gear rotates in the direction of the arrow. The projection (B) of the carriage connection gear engages with the recession (A) of the main cam gear. The carriage connection gear rotates in the direction of the arrow to perform the Eject operation.

If the Eject operation is performed without the cassette installed while repairing or making the mechanical phase alignment, the main cam gear will not rotate. For performing the Eject operation with the cassette carriage not installed, it is necessary to rotate the carriage connection gear by hand in the direction of the arrow.

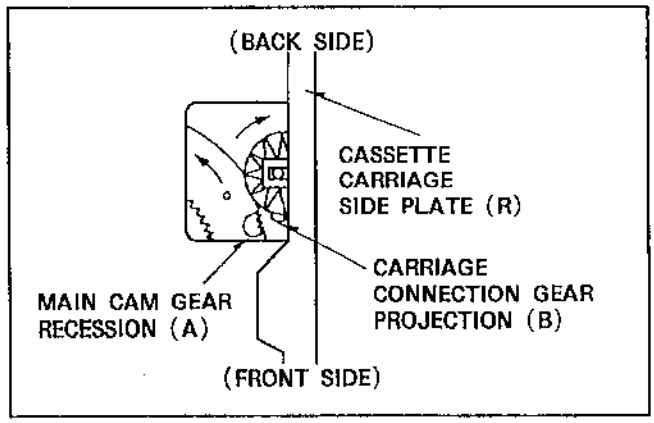


Fig.G3

1-5. REMOVAL of MECHANISM

1-5-1. Removal of Top Plate

1. Unscrew 2 screws (A) and unlock 4 locking tabs to arrow direction as shown in Fig.G4.
2. Lift up the Top Plate.

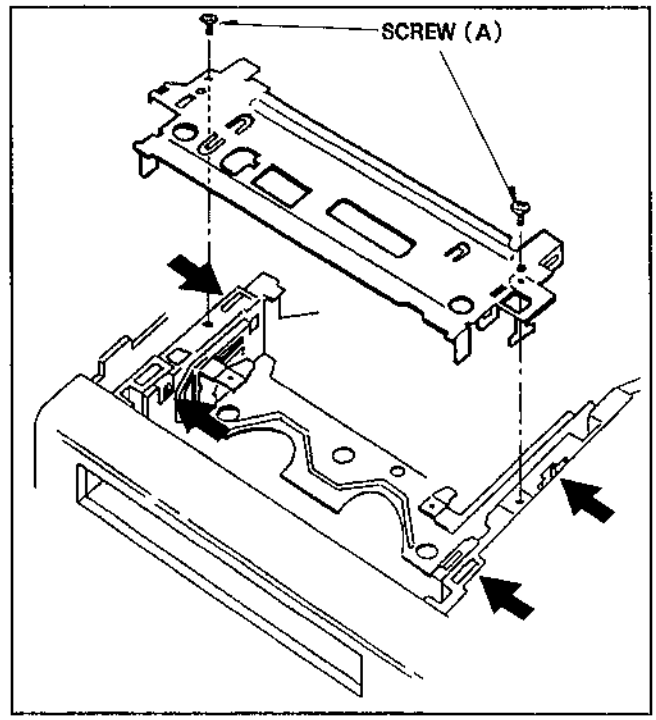


Fig.G4

1-5-2. Removal of Mechanism Chassis

1. Unscrew 2 screws (A) push the Holder Plate slightly to rear of the mechanism.
2. Unscrew a screw (B).
3. Disconnect all cable and connectors on the mechanism chassis.
   1)FE Head connector
   2)A/C Head connector
   3)Power Transistor connector
   4)Head Amp connector
   5)Capstan cable
4. Disconnect a Dew Sensor connector on the MAIN C.B.A.
5. Lift the mechanism chassis slightly and disconnect a connector of Cylinder Motor and a cable of Mechanism Connection C.B.A.
   Then mechanism chassis out of the unit.

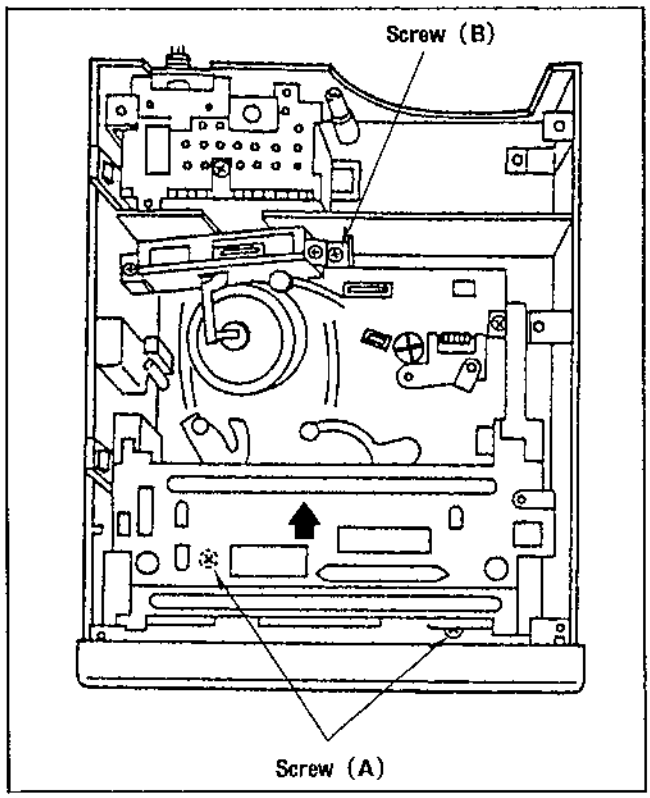


Fig.G5

1-5-3. Removal of Mechanism Connection C.B.A.

1. Unscrew 4 screws (C).
2. Lift up the Mechanism Connection C.B.A.

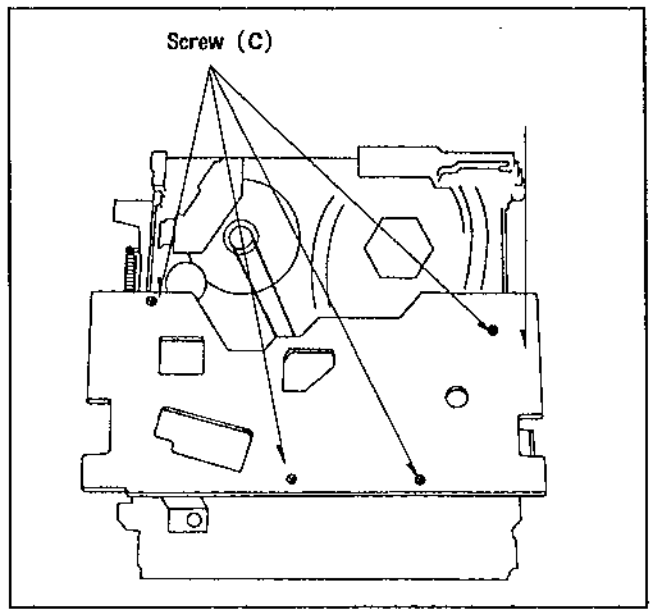
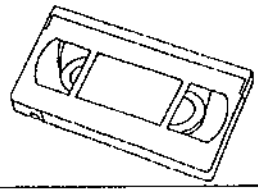
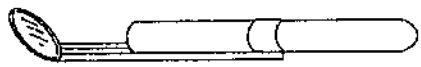
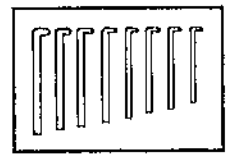
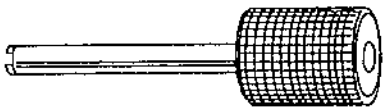
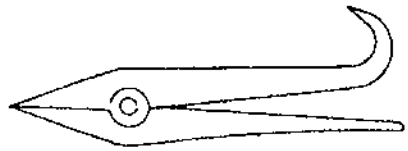
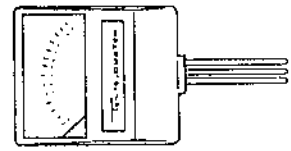
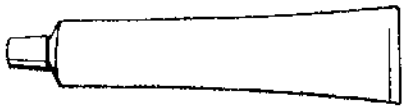
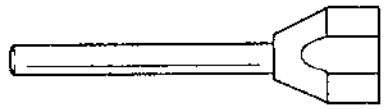
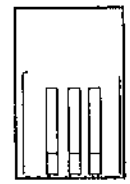
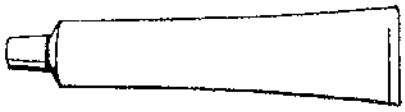
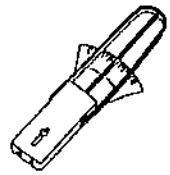


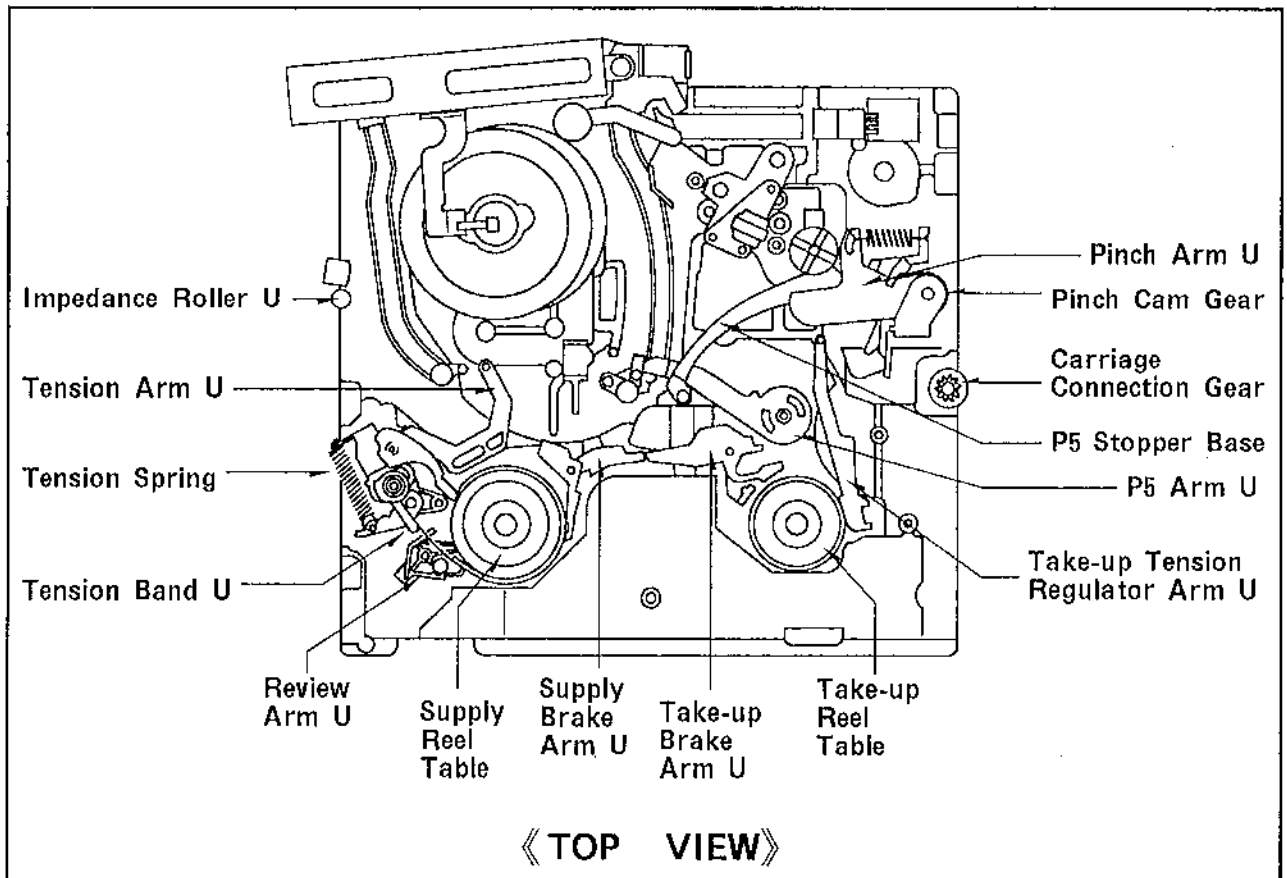
Fig.G6

1-6. SERVICE FIXTURES AND TOOLS

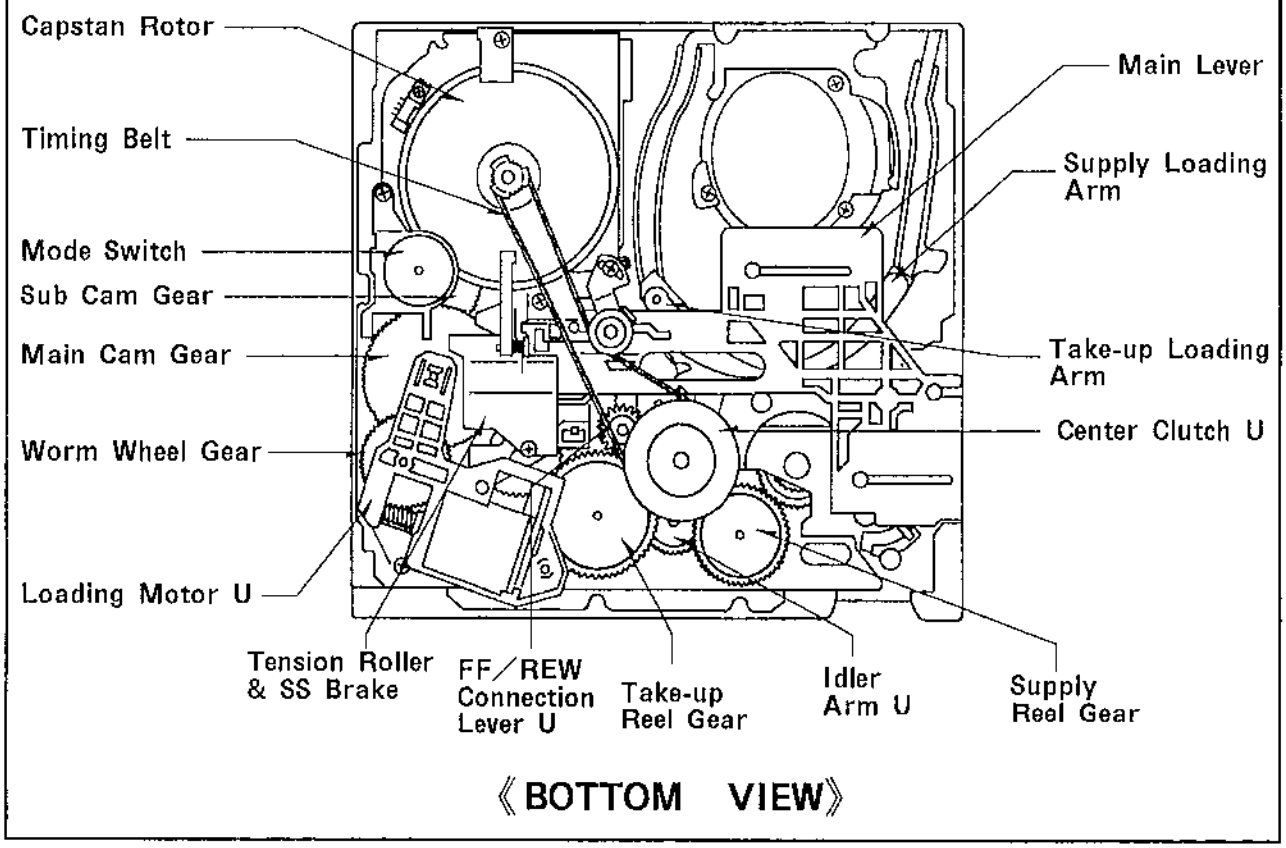
The regular maintenance is important to maintain the initial specification of the unit and prevent tape damage. The specified servicing fixture must be used to conduct adjustment.
The following fixtures, tools and measuring equipments are required to conduct complete Mechanical Adjustments.

VFM8080HQFP: VHS Alignment Tape 	VFK0948: Check Light 	VFK0326: Hex Wrench Set (0.7, 0.9, 1.2, 1.5, 1.6, 2.0, 2.4, 3.0mm) 
VFK0329: Post Adj. Screwdriver 	VFK0335: Retaining Ring Remover 	VFK0132: Back Tension Meter (Tentelometer,Made in U.S.A.) 
MOR265: Morlytone Grease (Black) (for metal parts) 	VFK0851: Center Fixing Tool 	VFK27: Head Cleaning Stick 
VFK0680: S.C.R. Grease (White) (for plastic parts) 	VFK66 ; Fan Type Tension Gauge 	VFK0330: Fine Adj. Screwdriver

1-7. Mechanical Parts Location



《TOP VIEW》



《BOTTOM VIEW》

SECTION 2
MAINTENANCE PROCEDURE

The MAINTENANCE CHART please refer to the Maintenance Section which are shown in service manual for each model.

2-1. Replacement of the Upper Cylinder Unit

1. Unscrew 2 screws (A).
2. Unsolder arrows marked portions on the top of the Upper Cylinder as shown in Fig.M1.
3. Remove the Upper Cylinder.
4. The Upper Cylinder can be reinstalled by reversing the removal procedure.
   However, when insert the Upper Cylinder be extremely carefully so that marked portion of P.C.board of the Upper Cylinder correctly matches to mark of the Lower Cylinder as shown in Fig.M2.

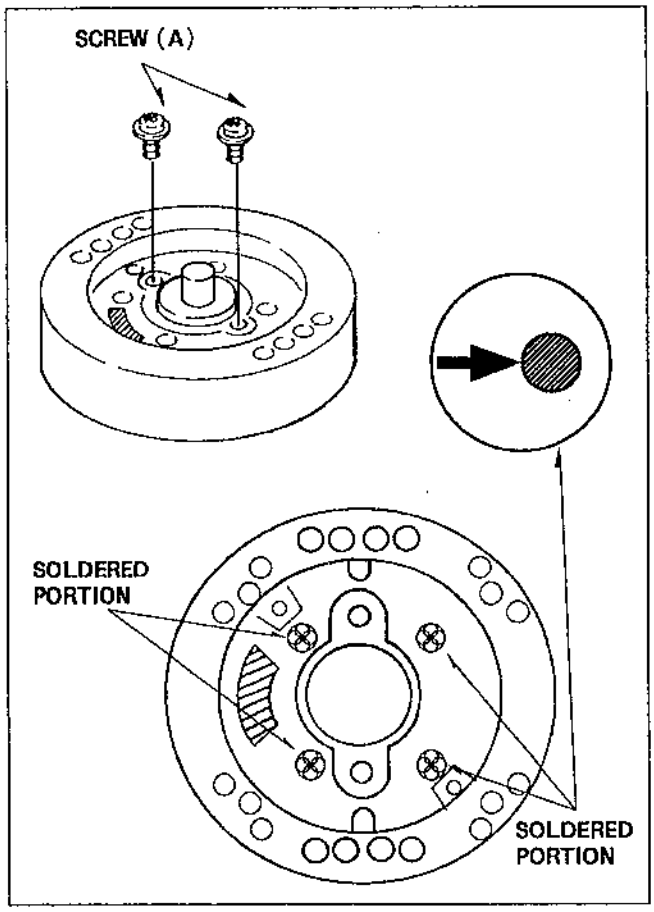


Fig.M1

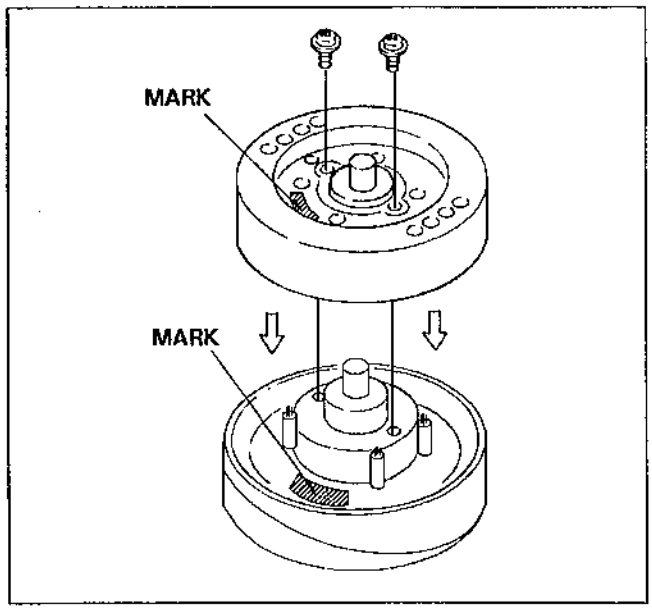


Fig.M2

<NOTE>
After reinstall the Upper Cylinder Unit should be perform Mechanical and Electrical adjustments.
3-2. FINE ADJUSTMENT of P2 and P3 POSTS
3-6. HORIZONTAL POSITION ADJUSTMENT

2-2. Replacement of Cylinder Unit

1. Remove the Earth Plate.
2. Unscrew 2 screws both side of Head Amp Unit and lift up the Head AMP.
3. Unscrew 3 screws (B) from back side of the mechanical chassis then remove the Cylinder Unit.
4. The Cylinder Unit can be reinstalled by reversing the removal procedure.

<Note>
After reinstall the Cylinder Unit should be perform Mechanical and Electrical adjustments.

3-2. FINE ADJUSTMENT of P2 and P3 POSTS
3-6. HORIZONTAL POSITION ADJUSTMENT

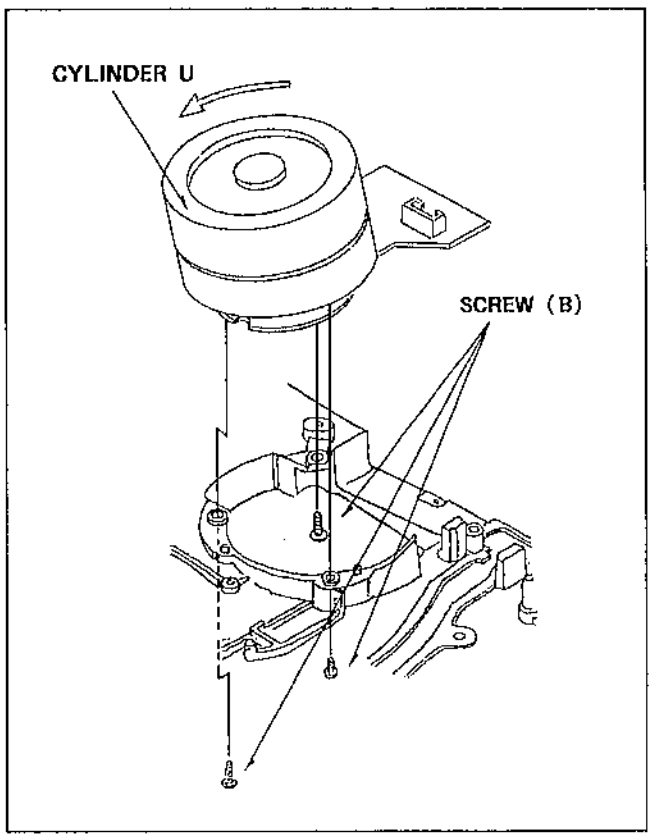


Fig.M3

2-3. Replacement of A/C HEAD Unit

1. Unscrew 3 screws (C)(D)(E) with the 3 springs then remove the A/C Head unit from the A/C Head Base.
2. The A/C Head Unit can be reinstalled by reversing the removal procedure.

<Note>
A space should be equality between the A/C Head U and the A/C Head Base when reinstall the A/C Head unit.

After reinstall the A/C Head Unit should be perform Mechanical and Electrical adjustments.

3-2. FINE ADJUSTMENT of P2 and P3 POSTS
3-3. COARSE ADJUSTMENT of A/C HEAD HEIGHT(1)
3-4. COARSE ADJUSTMENT of A/C HEAD HEIGHT(2)
3-5. FINE ADJUSTMENT of A/C HEAD HEIGHT
3-6. HORIZONTAL POSITION ADJUSTMENT

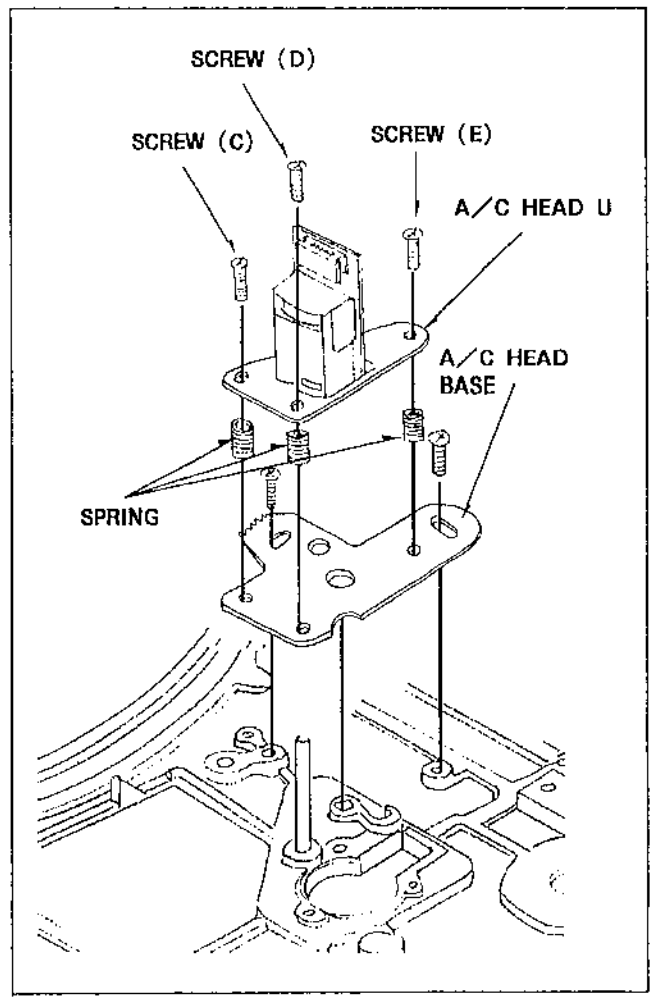


Fig.M4

2-4. Replacement of Full Erase Head Unit

1. Disconnect a connector (A).
2. Unscrew screw (F) then remove the FE Head.
3. FE Head Unit put into hole on the mechanical chassis and can be reinstalled by reversing the removal procedure.

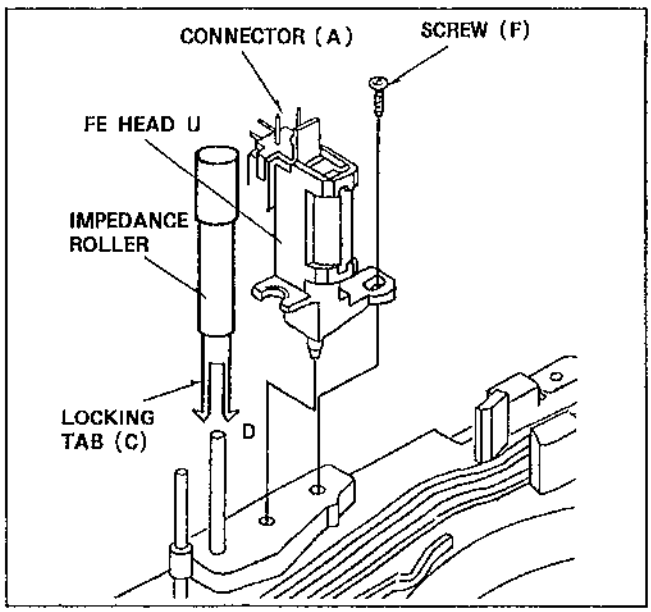


Fig.M5

2-5. Replacement of Capstan Rotor Unit and Stator Unit

1. Remove the Rotor Stopper.
2. Carefully lift up the Capstan Rotor from the Capstan Housing, taking care so as not loose the 2 Oil Seals.
3. Unscrew 3 screws (G) and remove the Capstan Stator Unit as shown in Fig.M6.
4. The Capstan Rotor and Stator can be reinstalled by reversing the removal procedure.

<Note>
After reinstall the Capstan Rotor and Stator Units should be perform Mechanical adjustment.

3-9. ADJUSTMENT of CAPSTAN HOUSING & STATOR
3-10. ADJUSTMENT of THRUST GAP
3-11. ADJUSTMENT of FG GAP

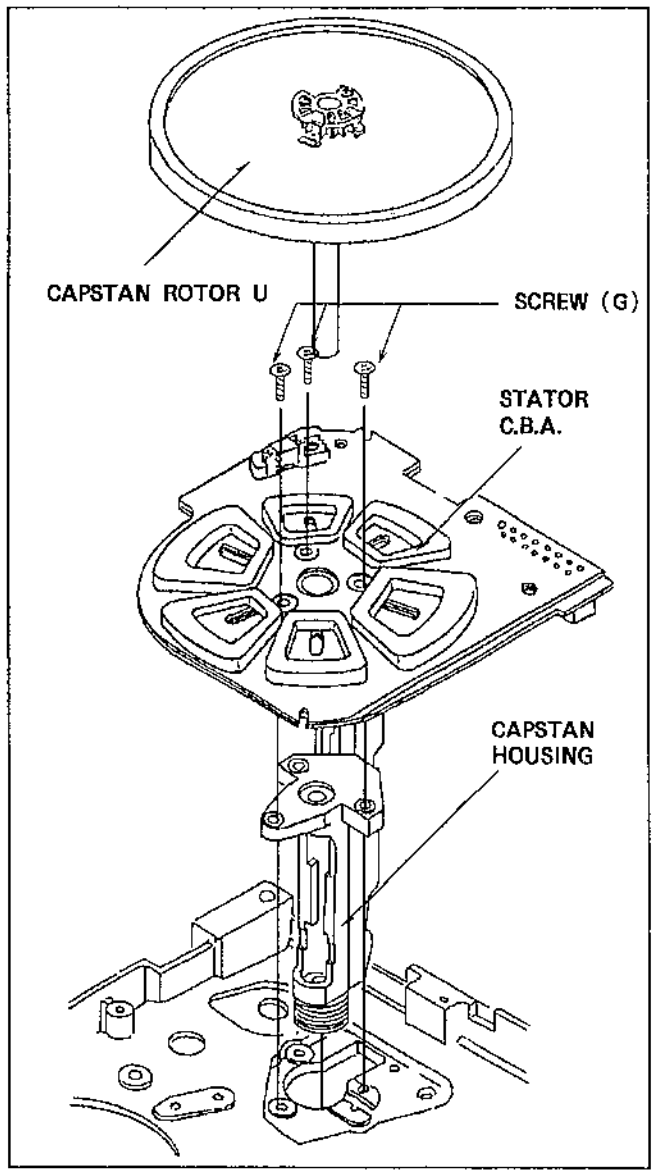


Fig.M6

2-6. Replacement of Impedance Roller Unit

1. Remove the Full Erase Head Unit with removal procedure(2-4).
2. Unlock then locking tab to direction of arrow mark as shown in Fig.M5 and remove the Impedance Roller Unit.
3. The Impedance Roller Unit can be reinstalled by reversing the removal procedure.

2-7. Replacement of Pinch Arm Unit

1. Unlock the locking tab on the Opener Piece and remove it from the shaft.
2. Remove the Pinch Arm Unit from the shaft.
3. The Pinch Arm Unit can be reinstalled by reversing the removal procedure.

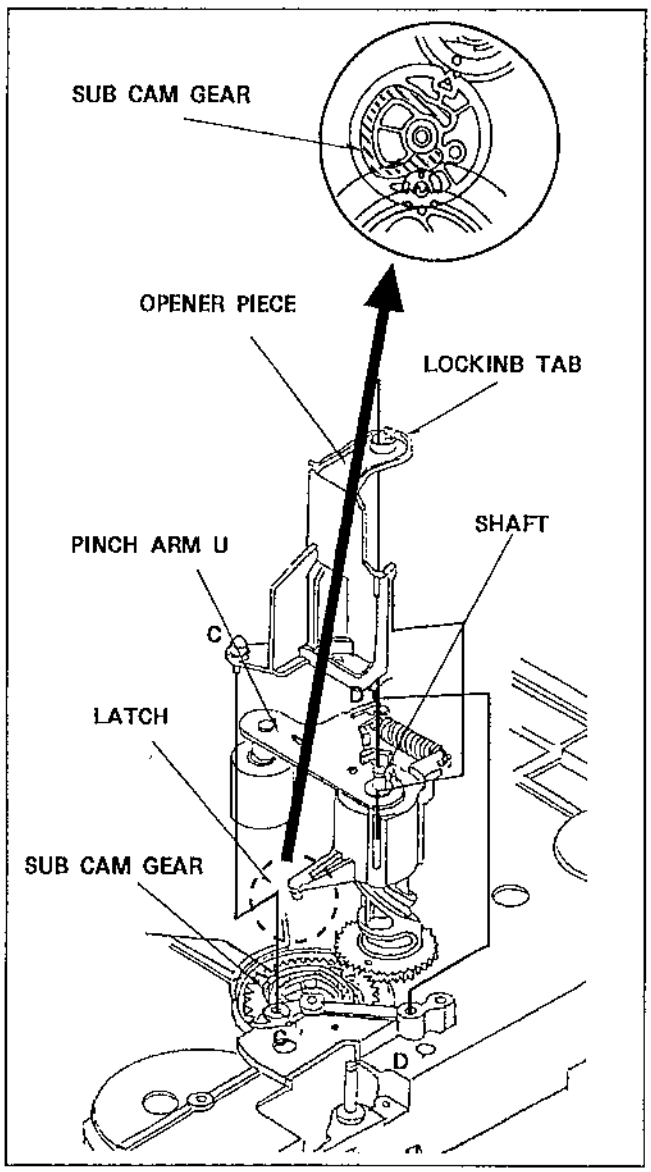


Fig.M7

2-8. Replacement of Take-up and Supply Reel Base Units

A. Supply Reel Base Unit

1. Remove the Tension Band Unit on the Supply Reel Base Unit.
2. Push the Supply main Brake Arm to direction of arrow mark and unlock the locking tab on the Supply Reel Base then pull up the Supply Reel Base Unit as shown in Fig.M8.
3. The Supply Reel Base Unit can be reinstalled by reversing the removal procedure.

B. Take-up Reel Base Unit

1. Push the Take-up Main Brake Arm to direction of arrow mark and unlock the locking tab on the top of Take-up Reel Base then pull out the Supply Reel Base Unit as shown in Fig.M8.

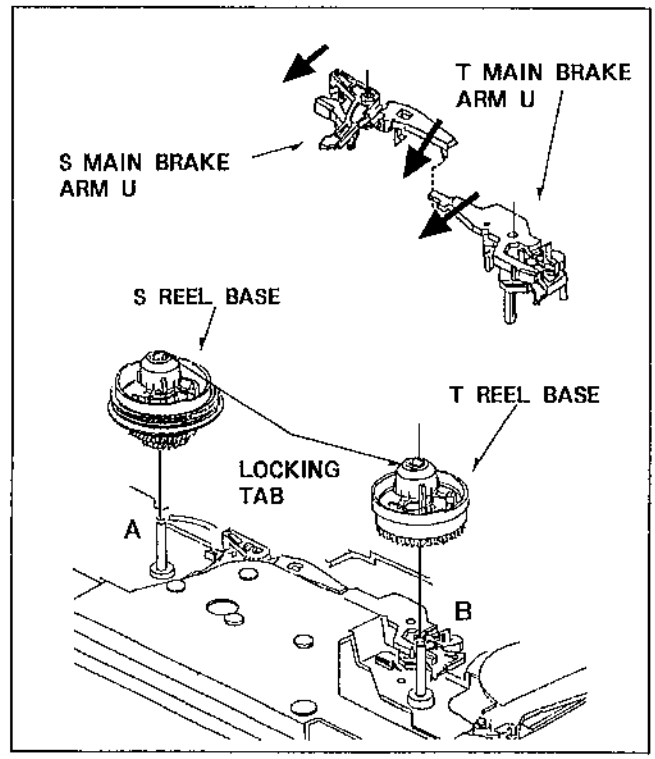


Fig.M8

2-9. Replacement of Take-up and Supply Brake Arm Unit.

1. Unlock the locking tab (A) to direction of arrow mark and lift up the Supply Brake Arm Unit.
2. Unlock the locking tab (B) and lift up the Take-up Brake Arm Unit.
3. Both Brake Arm Units can be reinstalled by reversing the removal procedure.
   However the boss (C) of the Supply Brake Arm Unit insert to hole (E) of mechanical chassis while pushing the Main Lever to direction of arrow mark as shown in Fig.M9. (expanded view)

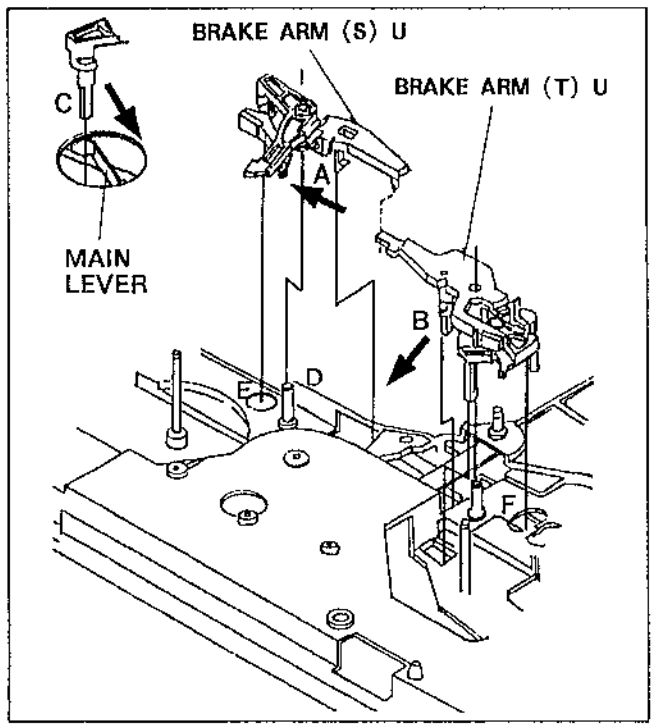


Fig.M9

2-10. Replacement of Tension Band Unit

1. Remove the cut washer (H) and lift up the Tension Arm Unit with the Tension Band and spring from the Tension Spring Arm.
2. Unlock the locking tab (A) to direction of arrow mark and remove the Tension Band from the Arm Unit.
3. Unlock the locking tab (B) and remove the Tension Band from the Tension Arm Unit.
4. The Tension Band Unit can be reinstalled by reversing the removal procedure.

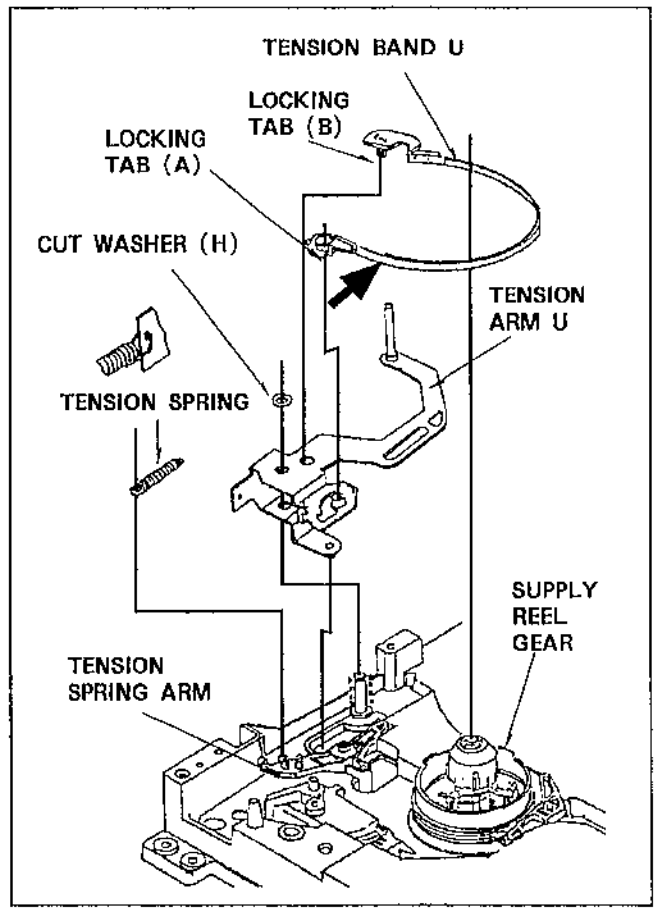


Fig.M10

2-11. Replacement of Loading Motor Unit

1. Unscrew screw (I).
2. Unlock the locking tab (A) from the top of the mechanical chassis.
3. Lift up the Loading Motor Bracket and push it to direction of arrow mark as shown in Fig.M11.
4. When reinstall the Loading Motor Unit, insert the locking hole (B') of Loading Motor Bracket Unit to shaft (B) on the mechanical chassis. Also a hole (C) of the loading Motor Unit must be matched to the shaft (C') as shown in Fig.M11.

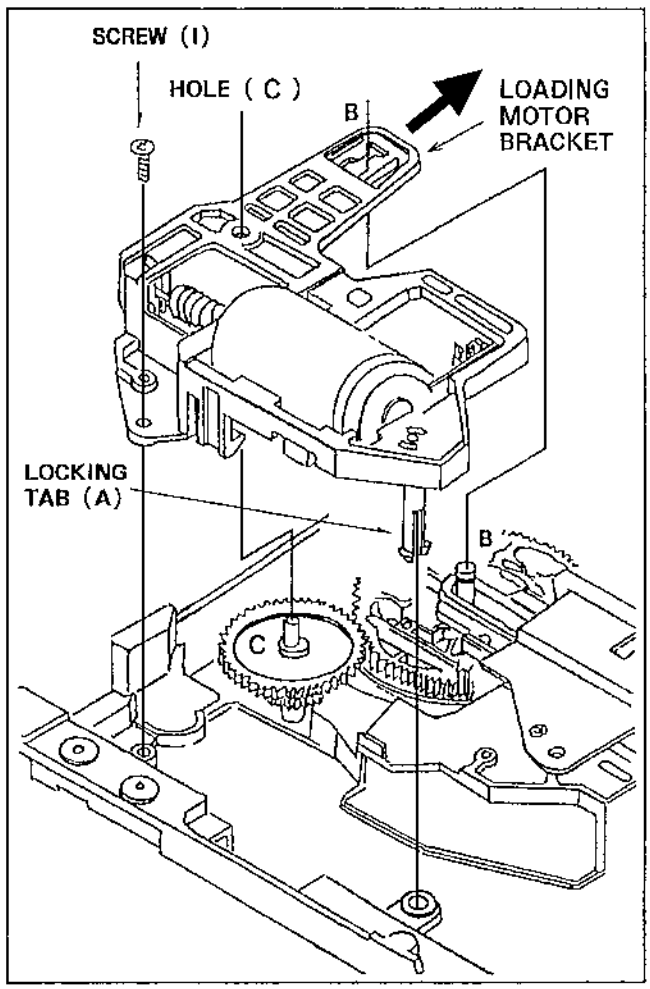


Fig.M11

2-12. Replacement of Cleaner Roller Unit

1. Unlock the locking tab (A) as shown in Fig.M12. and lift it up.
2. The Cleaner Roller Unit can be reinstalled by reversing the removal procedure.

3. Replacement of the Cleaner Rubber Unit.
   Hold the Cleaner Roller Unit and unlock the locking tab (B) then lift it up.

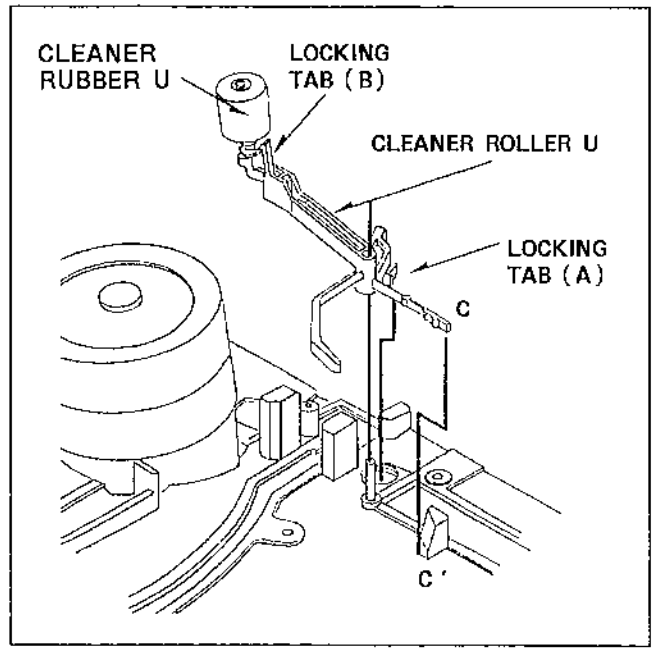


Fig.M12

2-13. Replacement of SS Brake Base Unit and Timing Belt

1. Remove the Timing Belt.
2. Unscrew (J) and (K) then remove SS Brake Base Unit.
3. SS Brake Unit and Timing Belt can be reinstalled by reversing the removal procedure.

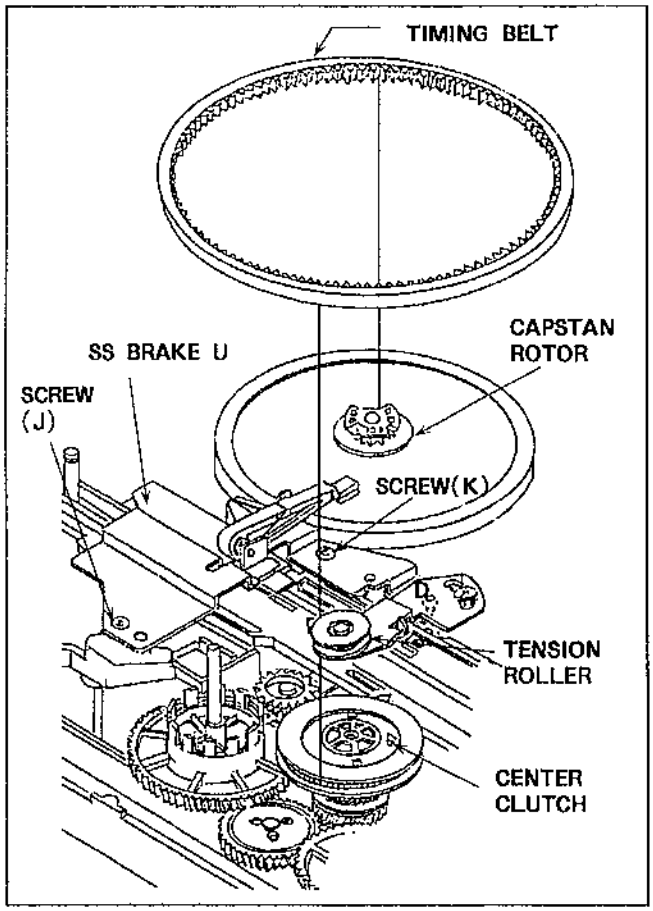


Fig.M13

2-14. Replacement of Supply & Take-up Inclined Base Unit

1. Remove SS Brake Unit, Main Lever Unit and Supply and Take-up Loading Arm Unit refer to SECTION 2. and 3. in this service manual.
2. Remove the Inclined Holder base (A) from back side of mechanism chassis.
3. Remove the Supply and Take-up Inclined Base Units.
4. The both Inclined Base Units can be reinstalled by reversing the removal procedure.

<NOTE>
After reinstall the Inclined Base Unit should be perform Mechanical adjustment.

3-2. FINE ADJUSTMENT of P2 and P3 POSTS
3-5. FINE ADJUSTMENT of A/C HEAD HEIGHT
3-6. HORIZONTAL POSITION ADJUSTMENT of A/C HEAD

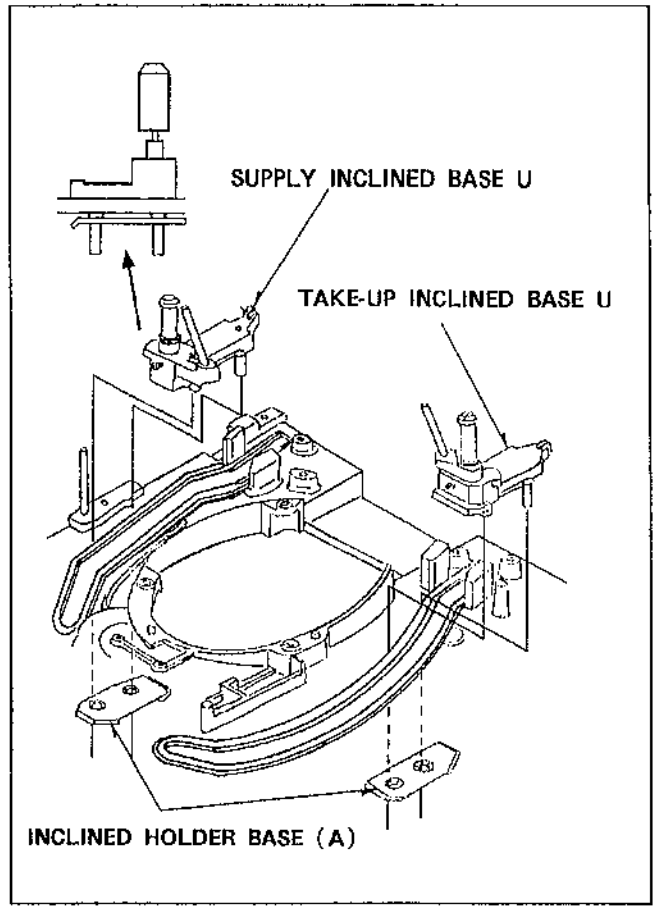


Fig.M14

SECTION 3
MECHANICAL ADJUSTMENT PROCEDURE

3-1. Coarse Adjustment of Tape Guide Post Height

1. Remove the Top Plate and Cassette Holder.
2. Turn the Loading Motor until the unloading completes.
3. Loosen the fixing screw of P2 and P3 Posts.
4. Rotate the P2 and P3 Posts clockwise to the end.
5. Rotate the P2 and P3 Posts twice counter-clockwise as shown in Fig.M15.
6. Install the Cassette Holder and Top Plate.
7. Playback the normal tape and make sure that the edge of not curing at the bottom or top end of the P1,P2,P3 and P4 Posts as shown in Fig.M17.

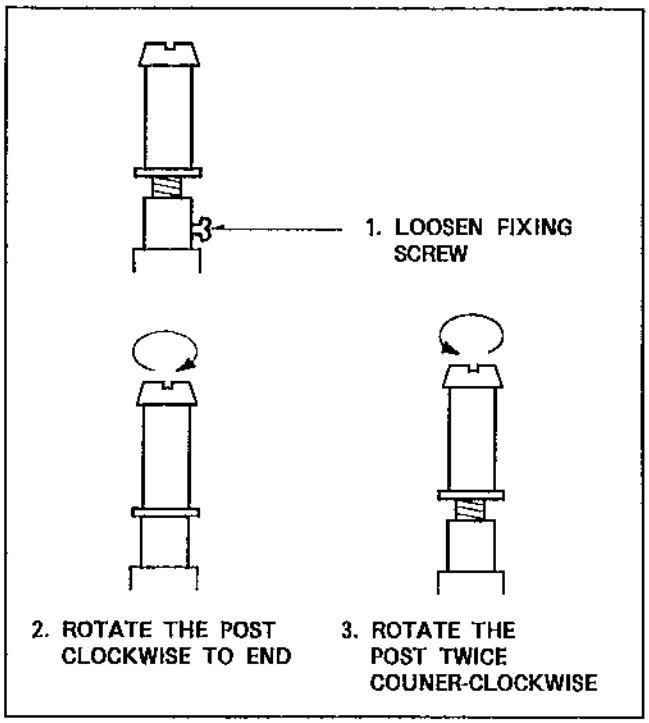


Fig.M15

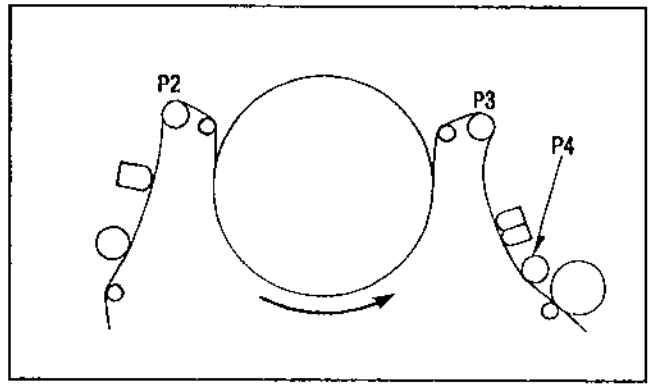


Fig.M16

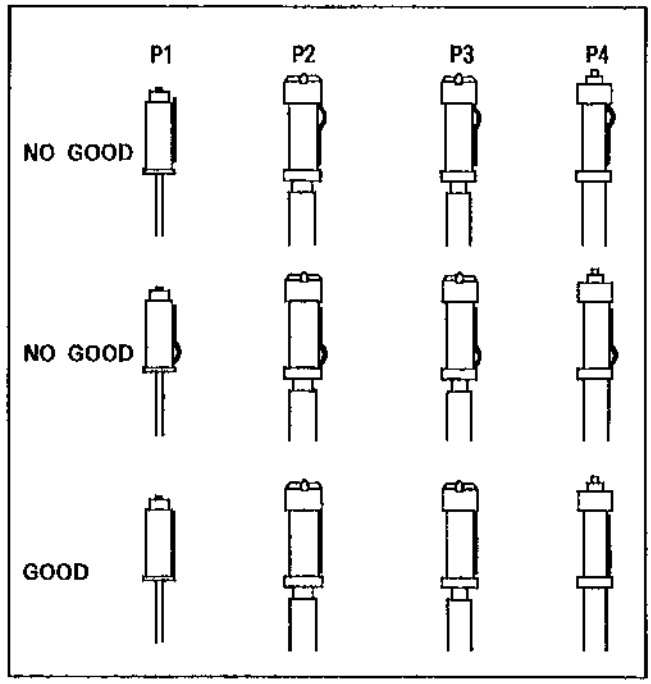


Fig.M17

3-2. Fine Adjustment of P2 and P3 Posts

1. Connect the oscilloscope to the Test Point of the HEAD AMP (Video RF Envelope) and the head switching pulse as a triggering signal.

<NOTE>
TEST POINT please refer to the MECHANICAL ADJUSTMENT INFORMATION which are shown in service manual for each model.

2. Playback the 2nd portion of the alignment tape.
3. Press the tracking control button on the Front panel and adjust for maximum Video RF envelope.
4. If the RF envelope appears like example "A" or "B" in Fig.M18 then adjustment of the tape guide post (P3:Exit) is necessary.
5. Adjust the P3 post with the post adjustment screwdriver so that the RF envelope waveform at the exit portion becomes flat as shown in Fig.M18.
6. If the RF envelope appears like example "C" or "D" in Fig.M18 then adjustment of the tape guide post (P2:Entrance) is necessary.
7. Adjust the P2 post with the post adjustment screwdriver so that the RF envelope waveform at the entrance portion becomes flat as shown in Fig.M18.

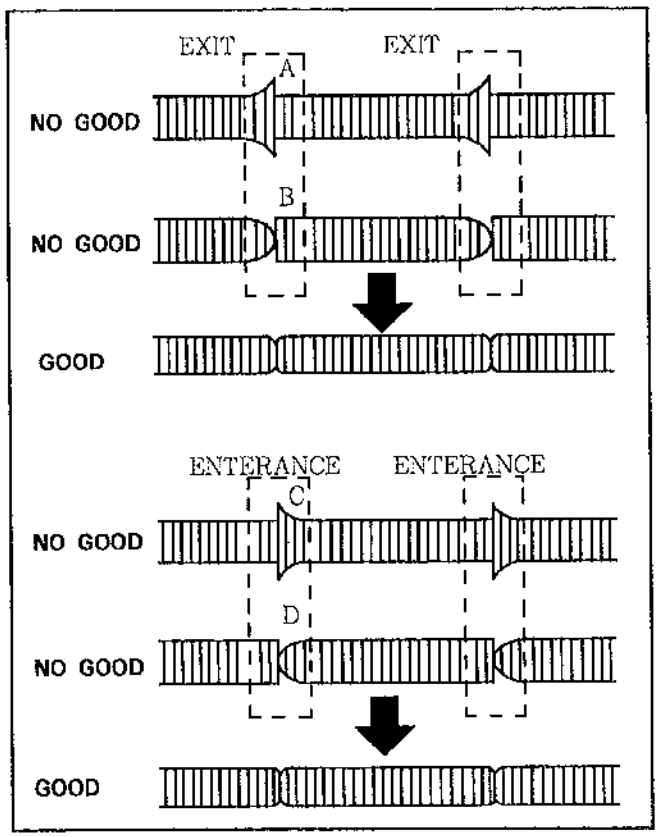


Fig.M18

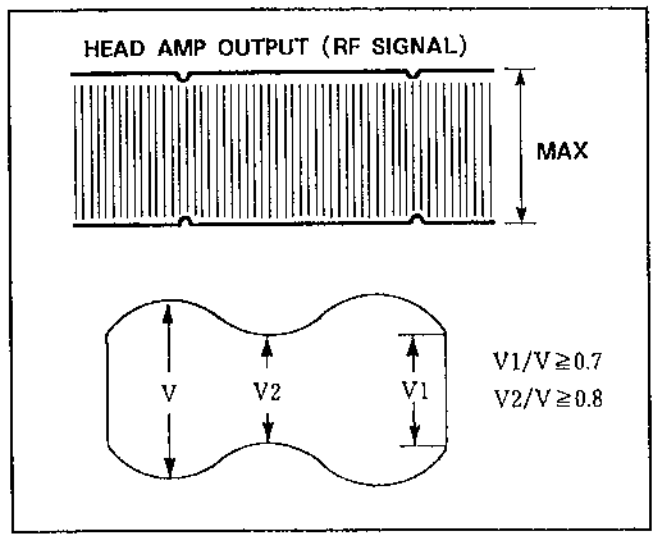


Fig.M19

3-3. Coarse Adjustment of A/C Head Height (1)

<NOTE>
This procedure should be performed only when the A/C Head is replaced.

1. Playback the normal tape.
2. Turn the 3 screws (A)(B)(C) mutually so that lower edge of tape running at lower edge of A/C Head and confirm a space as much as possible to flat between the A/C Head Unit and the A/C Head Base.

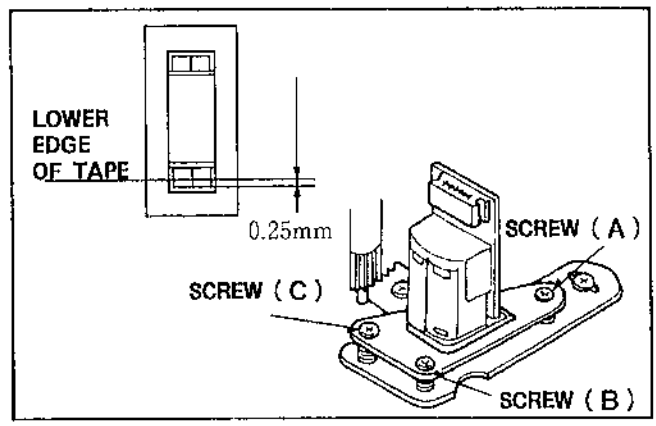


Fig.M20

3-4. Coarse Adjustment of A/C Head Height (2)

1. Playback the normal tape.
2. Rotate the screw (A) as shown in Fig.M20 until the wrinkle appears on the lower edge of tape at P4 Post.
3. Rotate the screw (B) until the wrinkle just disappear on the lower edge of tape at P4 Post.

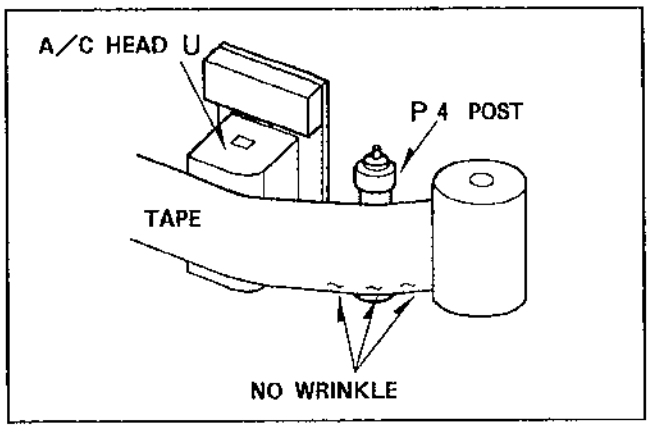


Fig.M21

3-5. Fine Adjustment of A/C Head Height

1. Connect the oscilloscope to the Audio output.
2. Playback the 2nd portion of the alignment tape.
3. Rotate the screw (C) so that audio signal becomes maximum.

<When moving the A/C Head up>

1. Rotate the screw (A) counter-clockwise until the wrinkle appears on the lower edge of tape at P4 Post.
2. Rotate the screw (B) counter-clockwise until just disappears on the lower edge of tape at P4 Post.
3. Rotate the screw (C) counter-clockwise until the audio signal is maximized.

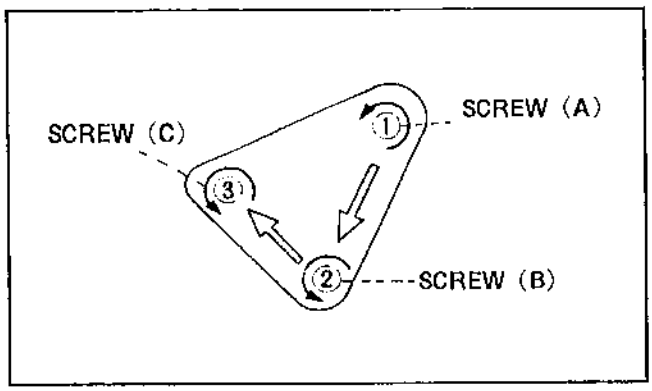


Fig.M22

<When moving the A/C Head down>

1. Rotate the screw (B) clockwise until the wrinkle appears on the lower edge of tape at P4 Post.
2. Rotate the screw (A) clockwise until the wrinkle just disappear on the lower edge of tape at P4 Post.
3. Rotate the screw (C) clockwise until the audio signal is maximized.

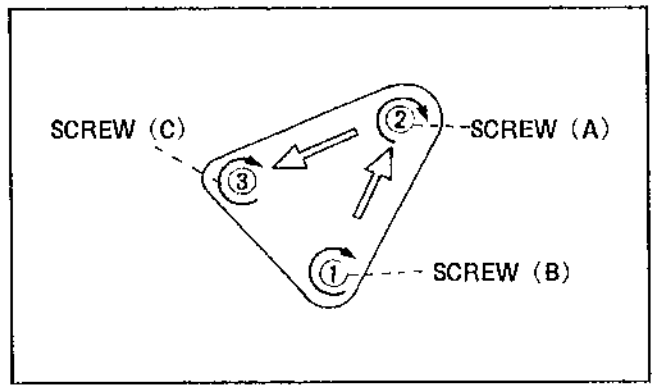


Fig.M23

3-6. Horizontal Position Adjustment of A/C Head.

<NOTE>
TEST POINT and JUMPER WIRE position, please refer to the MECHANICAL ADJUSTMENT INFORMATION which are shown in service manual for each model.

1. Set the tracking control into the center fix position by connect a jumper wire on the MAIN C.B.A.
2. Connect the oscilloscope to the Audio output, Video RF envelope on the Head Amp test point and head switching pulse on the Head Amp test point as for triggering.
3. Playback the 4th portion of the alignment tape.
4. Loosen the 2 screws (D)(E).
5. Adjust the A/C Head Base (F) so that the phase of audio drop-out and RF video drop-out becomes the same as possible. Fig.M24.
6. Playback the 2nd portion of the alignment tape.
7. Adjust the A/C Head Base (F) until the video RF signal is maximized.
8. Carefully tighten screw (D) with hold the A/C Head Base position with the Fine Adjustment Gear Driver then tighten screw (E).

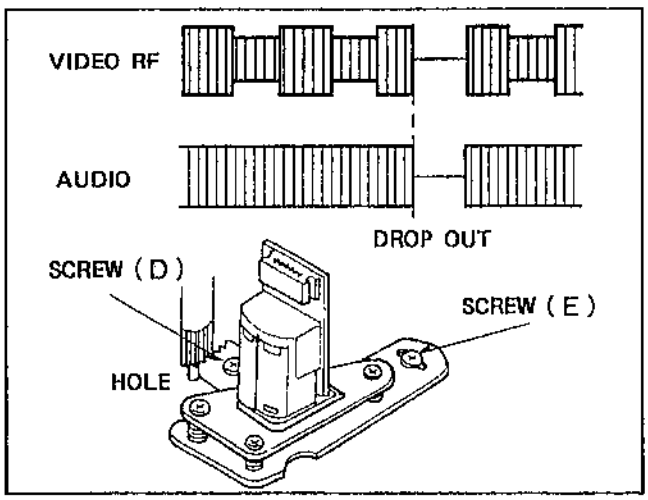


Fig.M24

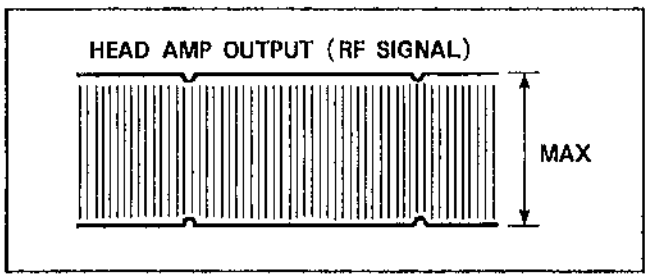


Fig.M25

3-7. Adjustment of Tension Post Position

1. Remove the Top Plate and Cassette Holder.
2. Turn the Loading Motor until the loading completes.
3. Adjust the hole of the Tension Band Unit by Hex wrench so that the left edge of the Impedance Roller and Tension Arm Unit as shown in Fig.M26.

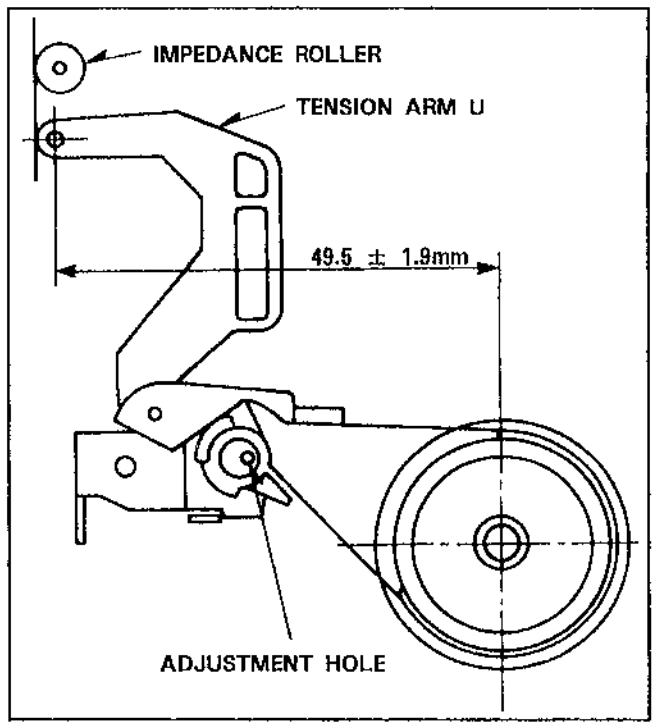


Fig.M26

3-8. Adjustment of Back Tension

1. Playback the cassette tape from the begging of tape and wait until tape movement has stabilized.
2. Insert the back tension meter into the path of the tape and confirm the back tension to be within specification as shown in Fig.M27.
3. If back tension is not in the specification, change the spring notch as shown in Fig.M28.

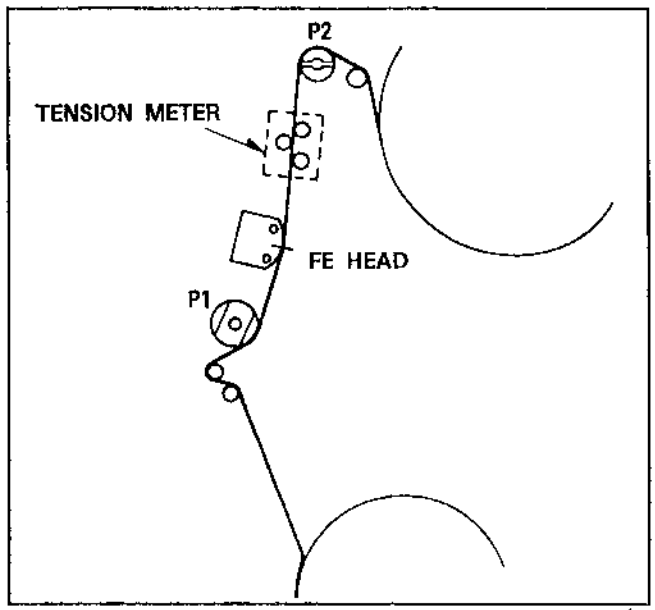


Fig.M27

<NOTE>
Specification of Back Tension, please refer to the MECHANICAL ADJUSTMENT INFORMATION which are shown in service manual for each model.

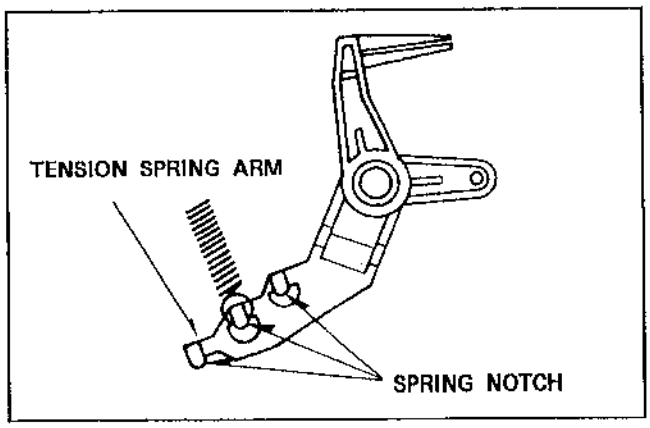


Fig.M28

3-9. Adjustment of Capstan Housing & Stator.

1. Install the Capstan Housing into the mechanical chassis and place the Capstan Stator into position.
2. Loosely tighten 3 screws (G).
3. Insert the Center Fixing Tool (VFK0851) as shown in Fig.M29.
4. Tighten 3 screws (G).
5. Remove the Center Fixing Tool.

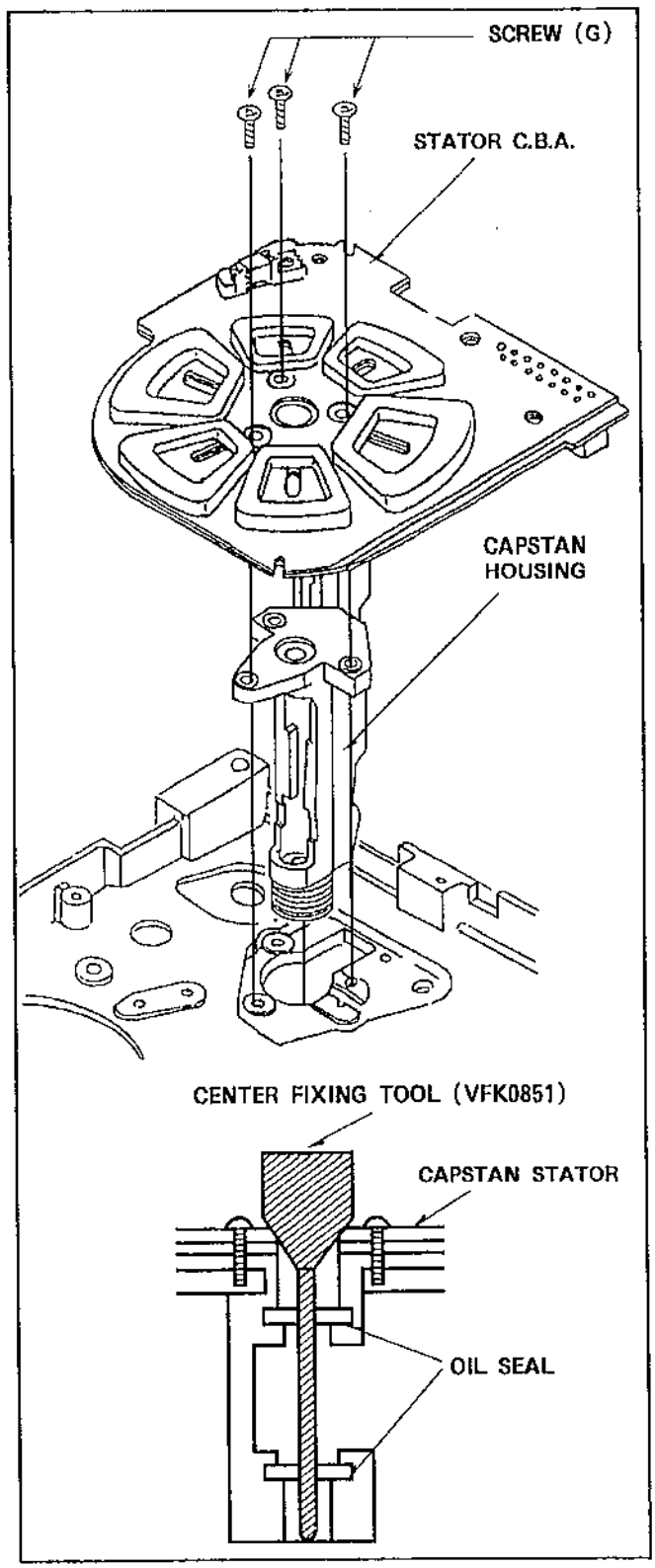


Fig.M29

3-10. Adjustment of Thrust Gap

1. Turn the Thrust Adjustment Screw clockwise to until the Capstan Rotor just separate from the Capstan Stator while rotating the Capstan Rotor by hand.
2. Turn the Thrust Adjustment Screw clockwise to 180 degrees from point at step 1.
3. Set the 2 Oil Seal to edge of the Capstan Housing as show in Fig.M30.

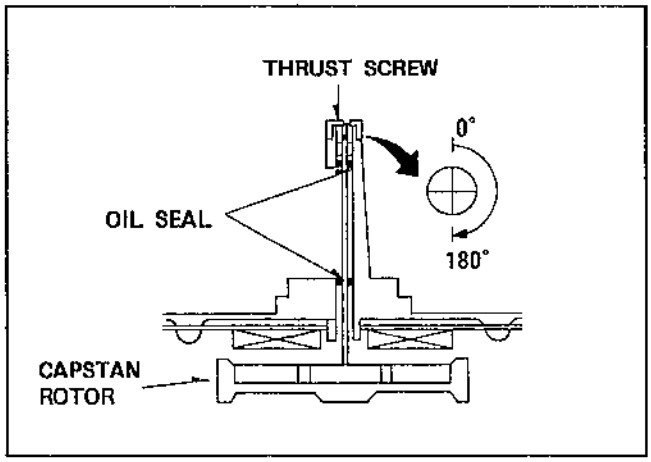


Fig.M30

3-11. Adjustment of FG GAP

1. Loosen screw (H) and set the Fine Adjustment Screw Driver in the hole on the Capstan Stator Unit.
2. Adjust the gap between FG Head and the Capstan Rotor.
3. After adjustment, tighten a screw (H).

<NOTE>
Specification of FG GAP, please refer to the MECHANICAL ADJUSTMENT INFORMATION which are shown in service manual for each model.

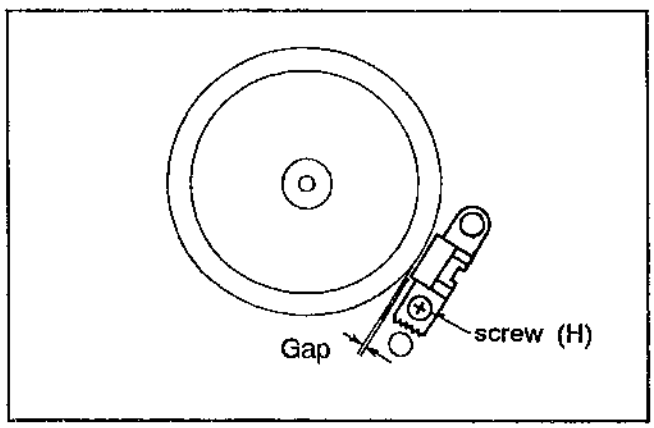


Fig.M31

3-12. Pressing Force Confirmation of the Pressure Roller

1. Playback the end portion of the 120 minutes tape.
2. Set the Fan type tension gauge to point (A) and push to direction indicated by the arrow (B) as shown in Fig.M32.
3. Confirm that reading of tension gauge is in specification at momentary stop the tape running.

<Note>
Specification of PRESSING FORCE, please refer to the MECHANICAL ADJUSTMENT INFORMATION which are shown in service manual for each model.

If the pressing force is not in specification, change the pressure spring.

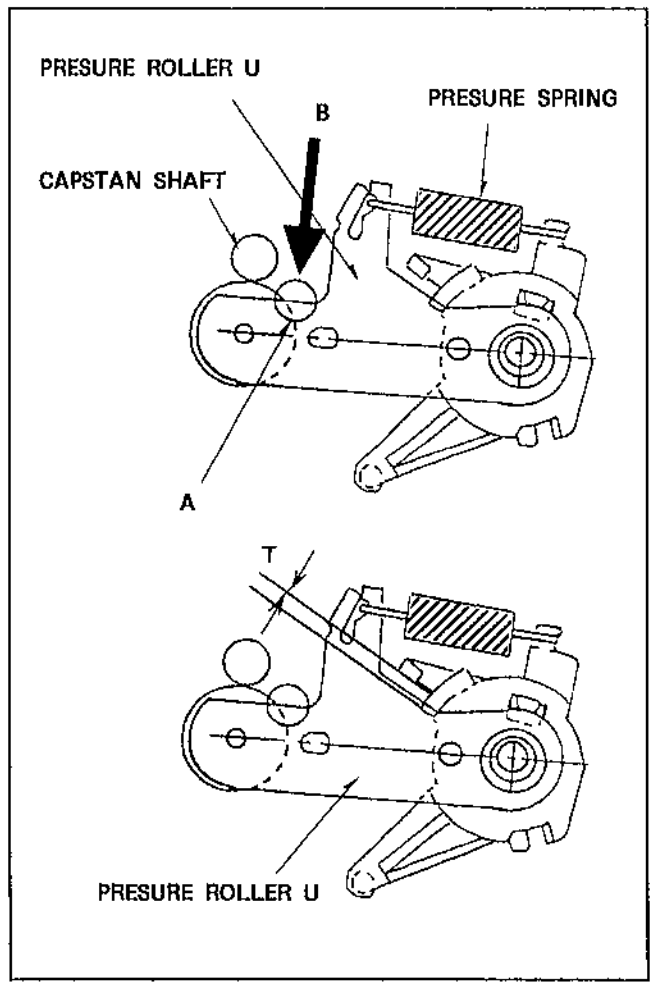


Fig.M32

SECTION 4
ASSEMBLY & PHASE ADJUSTMENT PROCEDURE

4-1. Assembly Procedures of Mechanism

The gear phase alignment is performed in the cassette down position and is crucial for the K-Mechanism to operate correctly.

1. Top view of gear phase alignment marks.
   There are alignment marks on the pinch cam gear and sub cam gear. there is one alignment mark on the carriage gear.

2. Bottom view of gear phase alignment marks.
   There are alignment marks on take-up loading gear and supply loading gear. There is an additional mark on the take-up loading gear that aligns with the mark on the main lever. There are alignment marks on the main cam gear and the sub cam gear. The mode switch gear mark aligns with a notch in the mode switch frame.

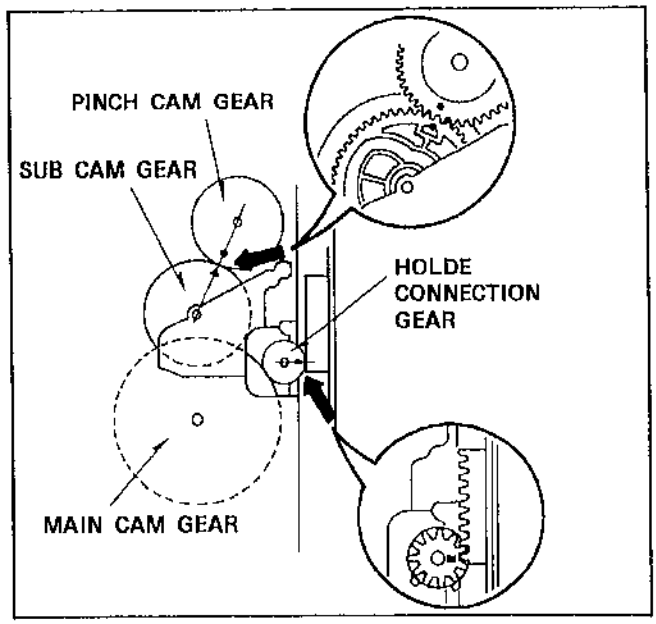


Fig.M33

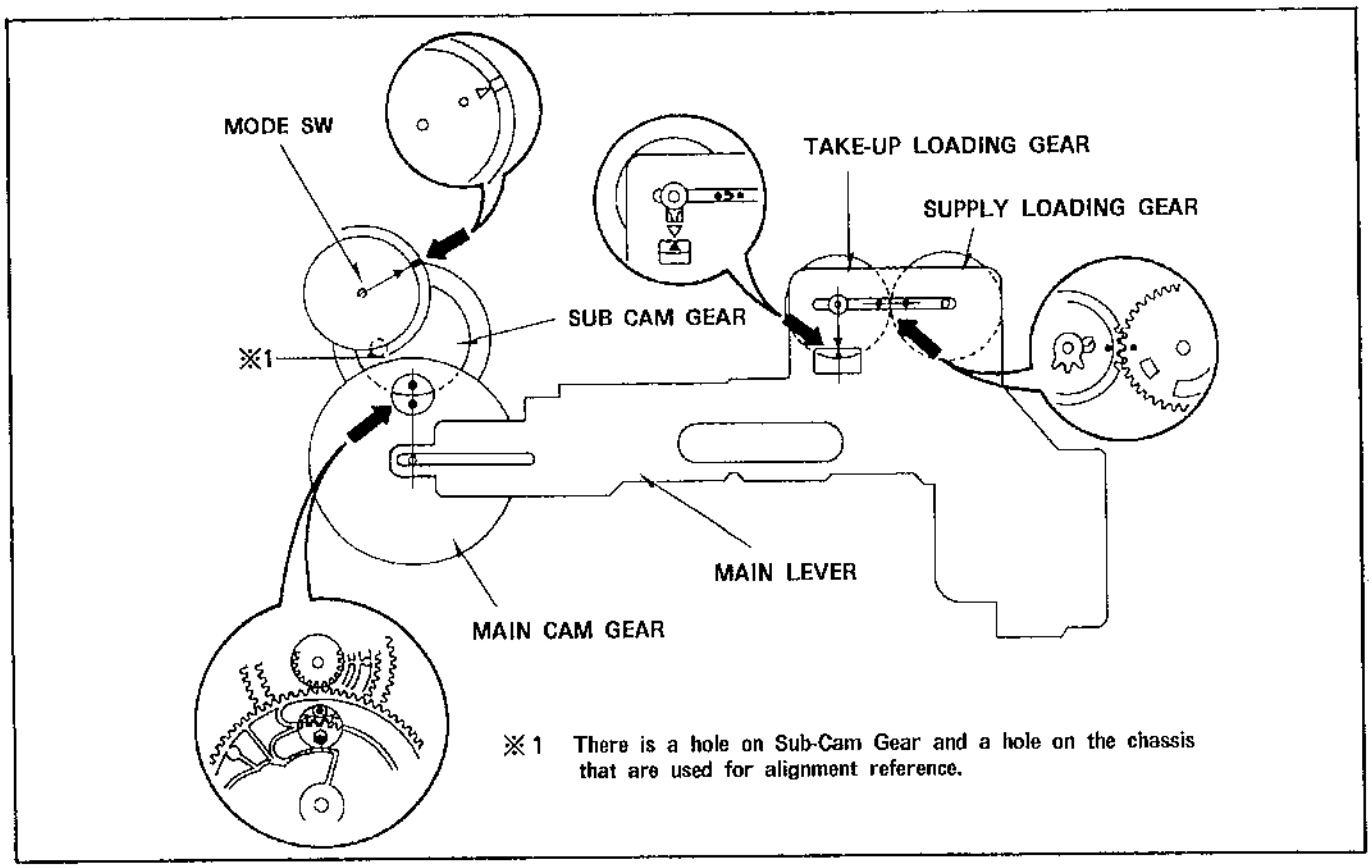

MODE SW
TAKE-UP LOADING GEAR
SUPPLY LOADING GEAR
SUB CAM GEAR
※1
MAIN LEVER
MAIN CAM GEAR
※1 There is a hole on Sub-Cam Gear and a hole on the chassis that are used for alignment reference.

Fig.M34

4-2. Assembly of parts on the Top Chassis

1. Install the Pinch Cam Gear onto shaft (A) and the P5 Arm Unit onto shaft (B).
2. Install the P5 Stopper Base with the cut washer (D) and screw (C).
3. Install the P5 Stopper on the P5 Stopper Base with latch (E).

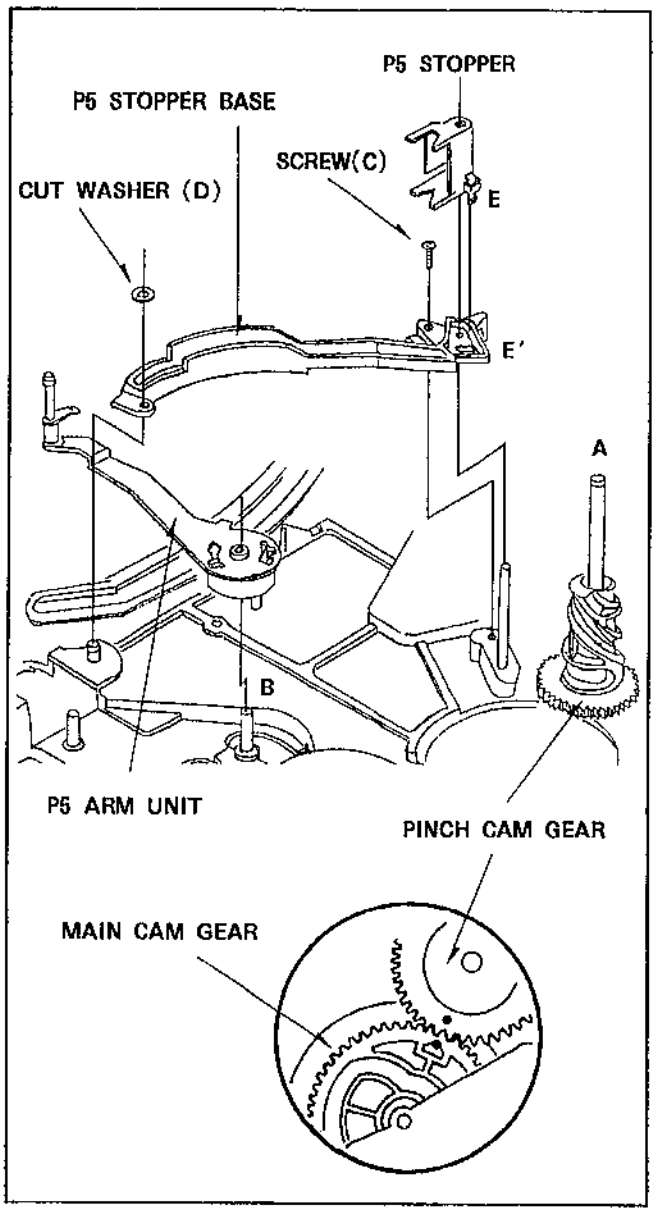


Fig.M35

4-3. Assembly of parts on the Bottom Chassis

1. Install the Idler Arm Unit onto shaft (F).
2. Install the Take-up and Supply Reel Gears onto shaft (G) and (H).
3. Install the Idler Regulator Level onto shaft (I) then install the Direct Lever.
4. Install the Center Clutch onto shaft (F) with the cut washer.

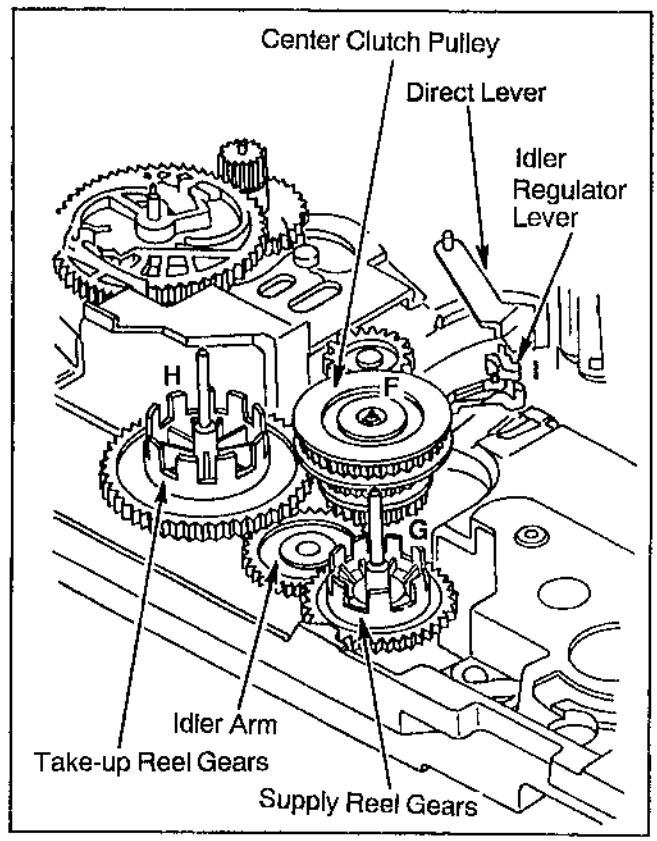


Fig.M36

4-4. Assembly of Main Cam Gear and Sub Cam Gear

1. Install the Sub Cam Gear on to shaft (J) so that the chassis hole aligns with hole in the Sub Cam Gear.
2. Rotate the Holder Connection Gear to position of arrow mark as shown in Fig.M37.
3. Install the Main Cam Gear onto shaft (K) so that the hole of the Main Cam Gear aligns with the hole in the Sub Cam Gear. Also insert the boss of the Take-up Tension Regulator Arm into the slot on the Main Cam Gear.

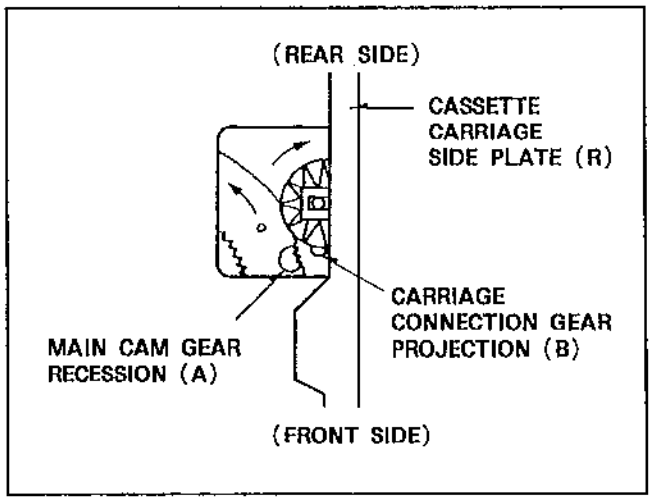


Fig.M37

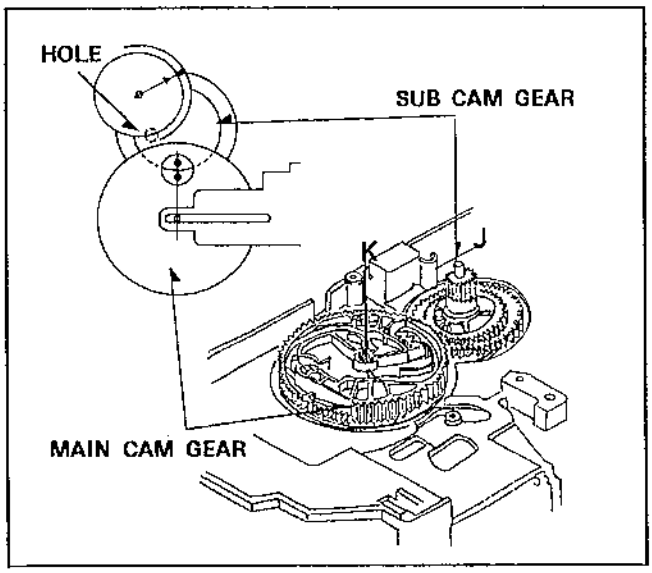


Fig.M38

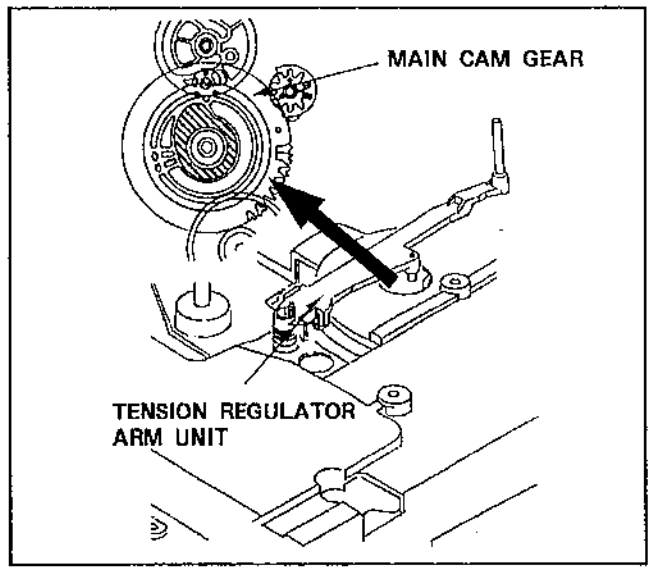


Fig.M39

4-5. Assembly of Mode Switch

1. Align a triangle mark on the Mode Switch Gear with the notch on the Mode Switch frame.
2. Confirm the Main and Sub Cam Gears aligned properly then install the Mode Switch with screw (L).

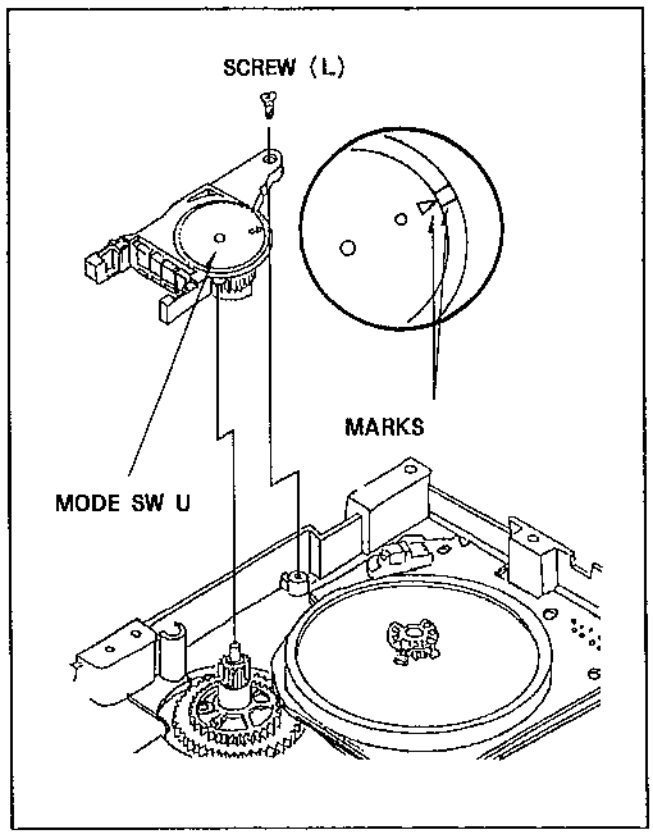


Fig.M40

4-6. Assembly of Take-up and Supply Loading Gears.

1. Install the Supply Loading Gear onto the shaft (S).
2. Install the Take-up Loading Gear onto the shaft (T) so that hole on the Take-up Loading Gear align with the hole on the Supply Loading Gear.
3. Install the Supply Loading Arm onto shaft of the Supply Inclined Base with washer.
4. Insert the Take-up Loading Arm onto shaft of the Take-up Inclined Base with washer.

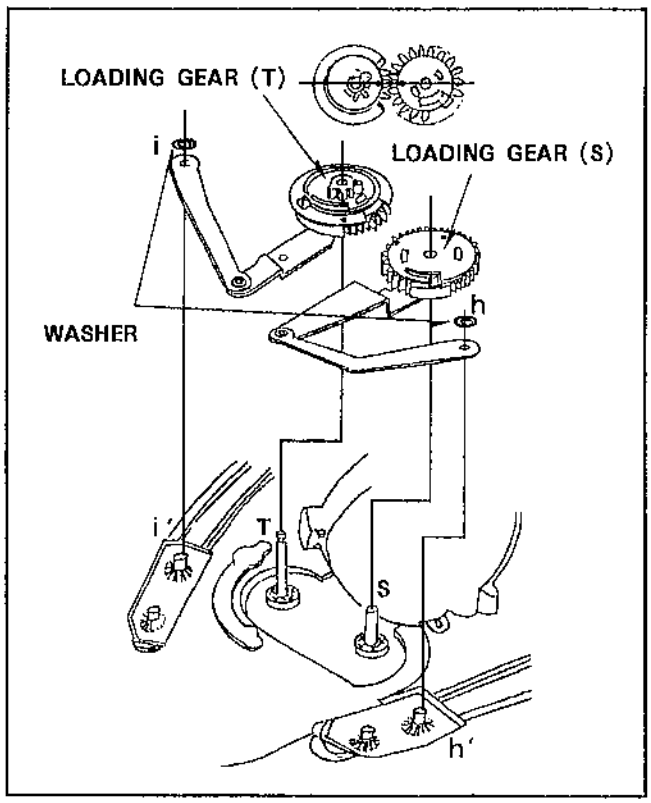


Fig.M41

4-7. Assembly of Main Lever

1. Install the Main Lever Arm checking that the boss of arms and shafts are in correct position and mark on the Main Lever Arm is aligned with mark on the Take-up Loading Gear.
2. Insert the 2 cut washer as shown in Fig.M42.

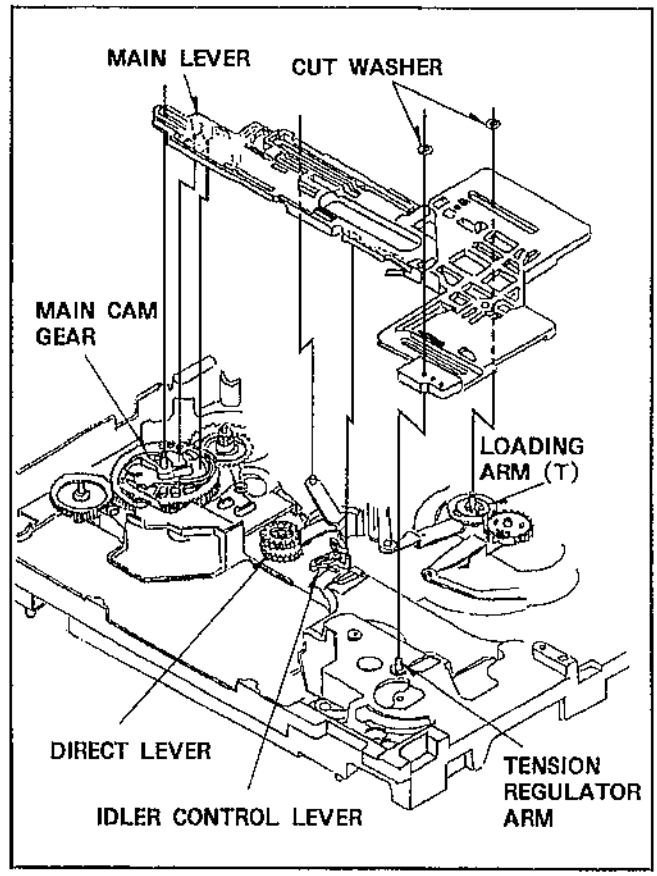


Fig.M42

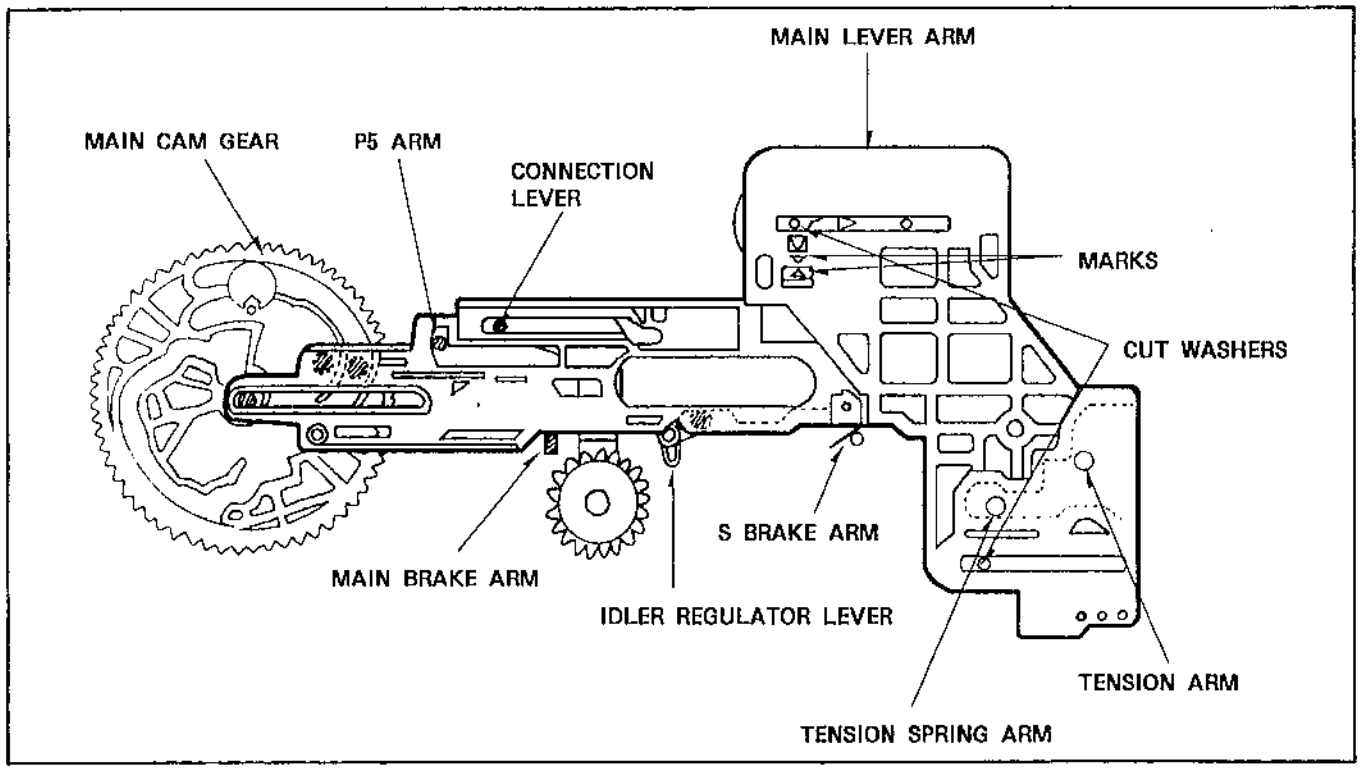


Fig.M43

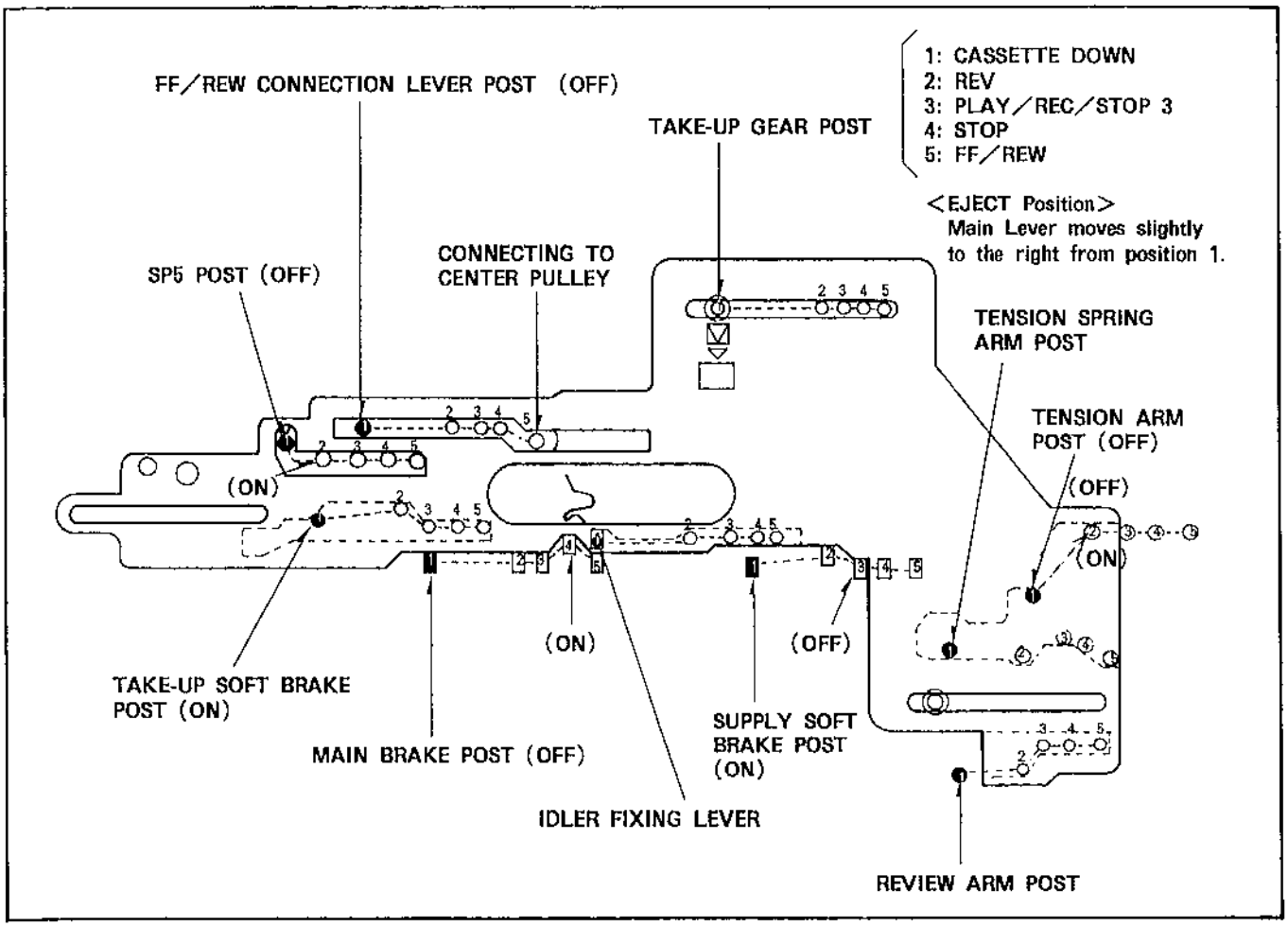


Fig.M44

4-8. Reinstall of the Cassette Compartment

1. Push the locking tabs to direction as shown in Fig.M45 and remove the Top Plate.

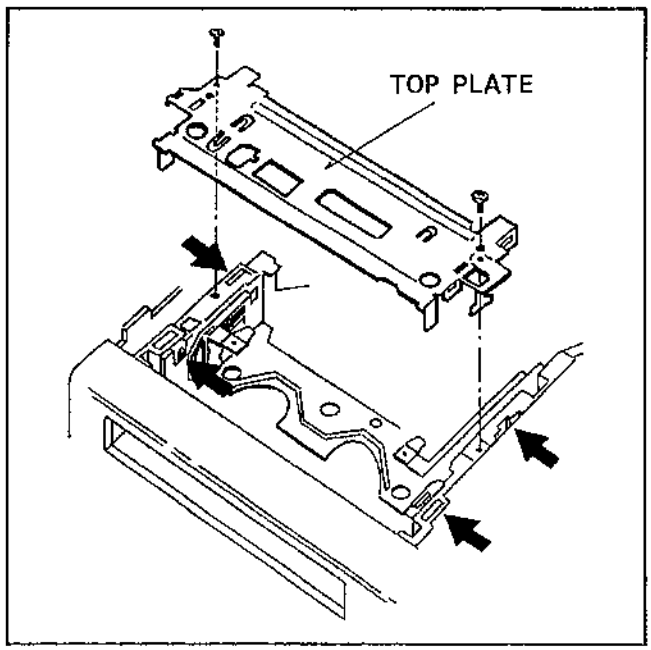


Fig.M45

2. Lift up the Cassette Holder Unit as shown in Fig.M46.

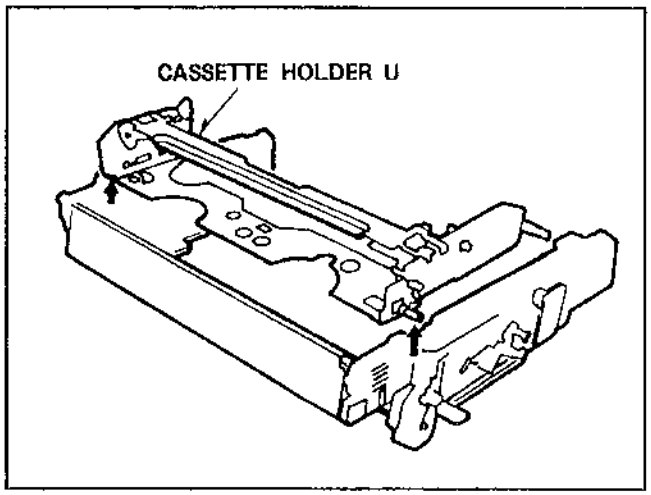


Fig.M46

3. Press the Wiper Arm to direction indicated by arrow mark so that the Wiper Arm comes to cassette down position completely as shown in Fig.M48. Confirm a triangle mark on the Wiper Arm aligns with the mark on the Rack (B) Unit.

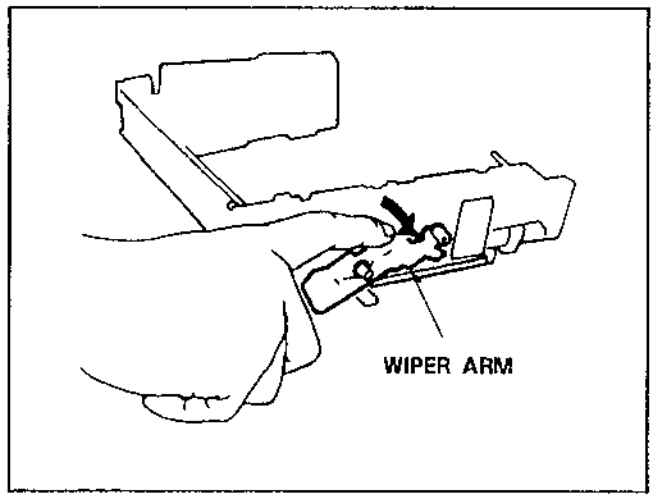


Fig.M47

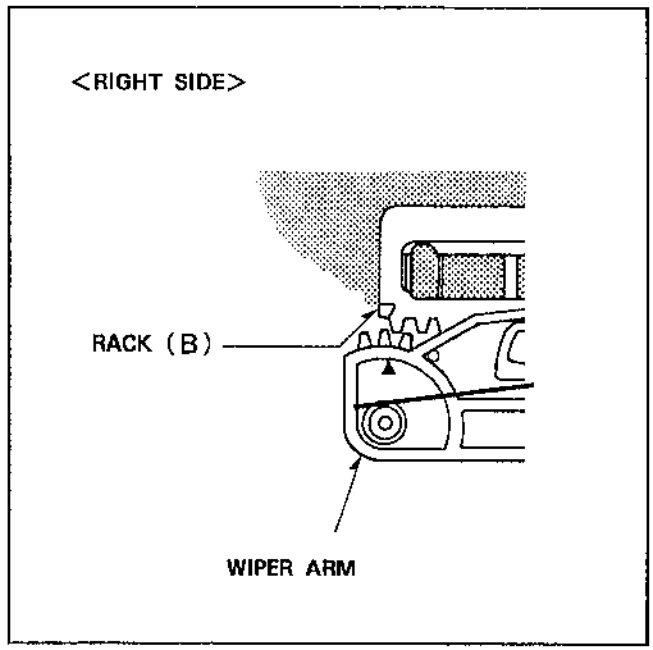


Fig.M48

4. Install the cassette compartment (without cassette holder) to the mechanical chassis so that mark on the Holder Connection Gear should line up with first tooth of the Rack Gear as shown in Fig.M49.

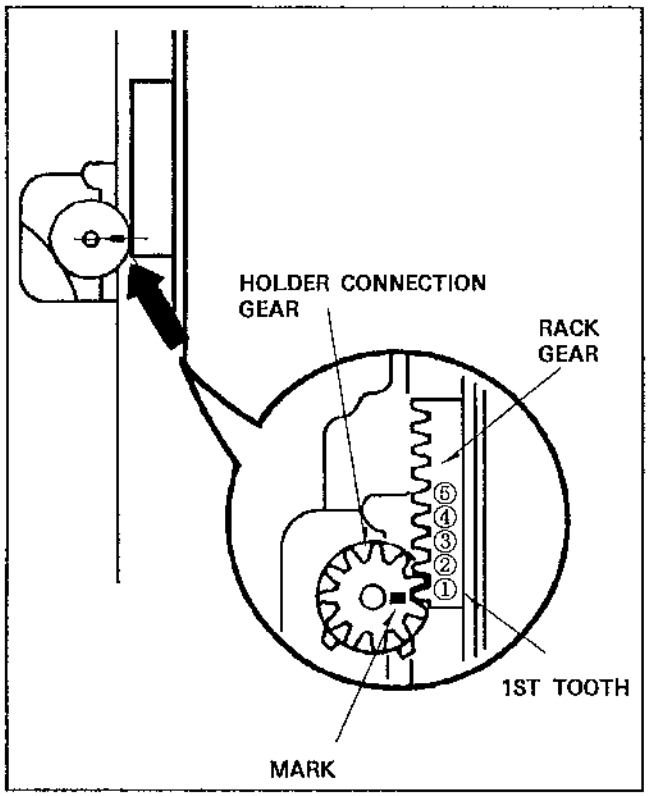


Fig.M49

5. Tighten 4 screws as shown in Fig.M50.
6. Manually move the loading mechanism toward the EJECT position by turn the Loading Motor and stop just before completion, so that the Wiper Arm straight up.
7. Install the Cassette Holder Unit in the Cassette Compartment Base as shown in Fig.M51.
8. Install the Top Plate on the Cassette Compartment Base.
9. Manually confirm that front loading and main loading run smoothly.

<NOTE>
For proper front loading, the guide pin on the opener lever should follow the upper track of the right side panel as shown in Fig.M52.

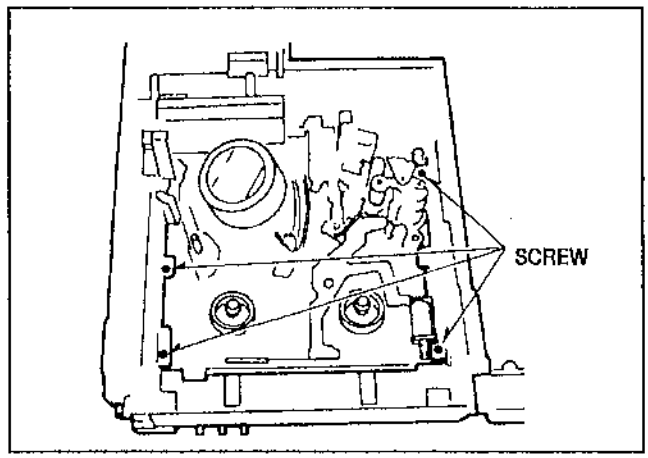


Fig.M50

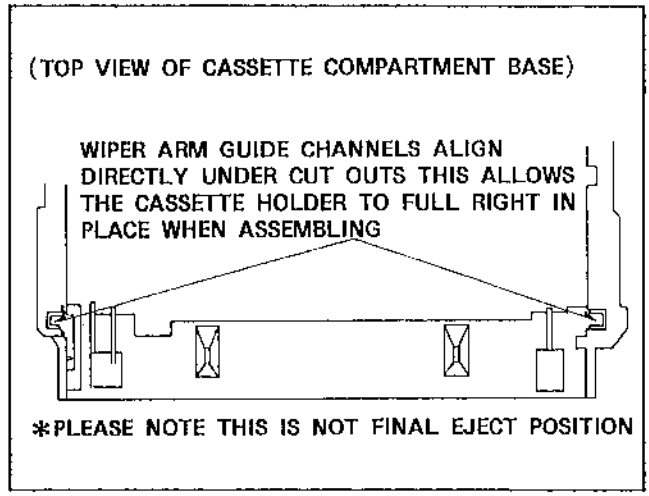

(TOP VIEW OF CASSETTE COMPARTMENT BASE)
WIPER ARM GUIDE CHANNELS ALIGN DIRECTLY UNDER CUT OUTS THIS ALLOWS THE CASSETTE HOLDER TO FULL RIGHT IN PLACE WHEN ASSEMBLING
*PLEASE NOTE THIS IS NOT FINAL EJECT POSITION

Fig.M51

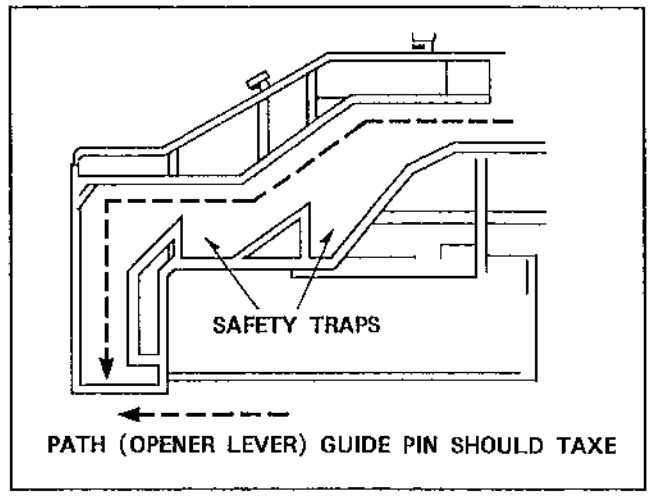


Fig.M52